

PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE  
PREPARED OR APPROVED BY ME, AND THAT I AM A DULY  
LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND.  
LICENSE NUMBER: 31168  
EXPIRATION DATE: 1/12/2017

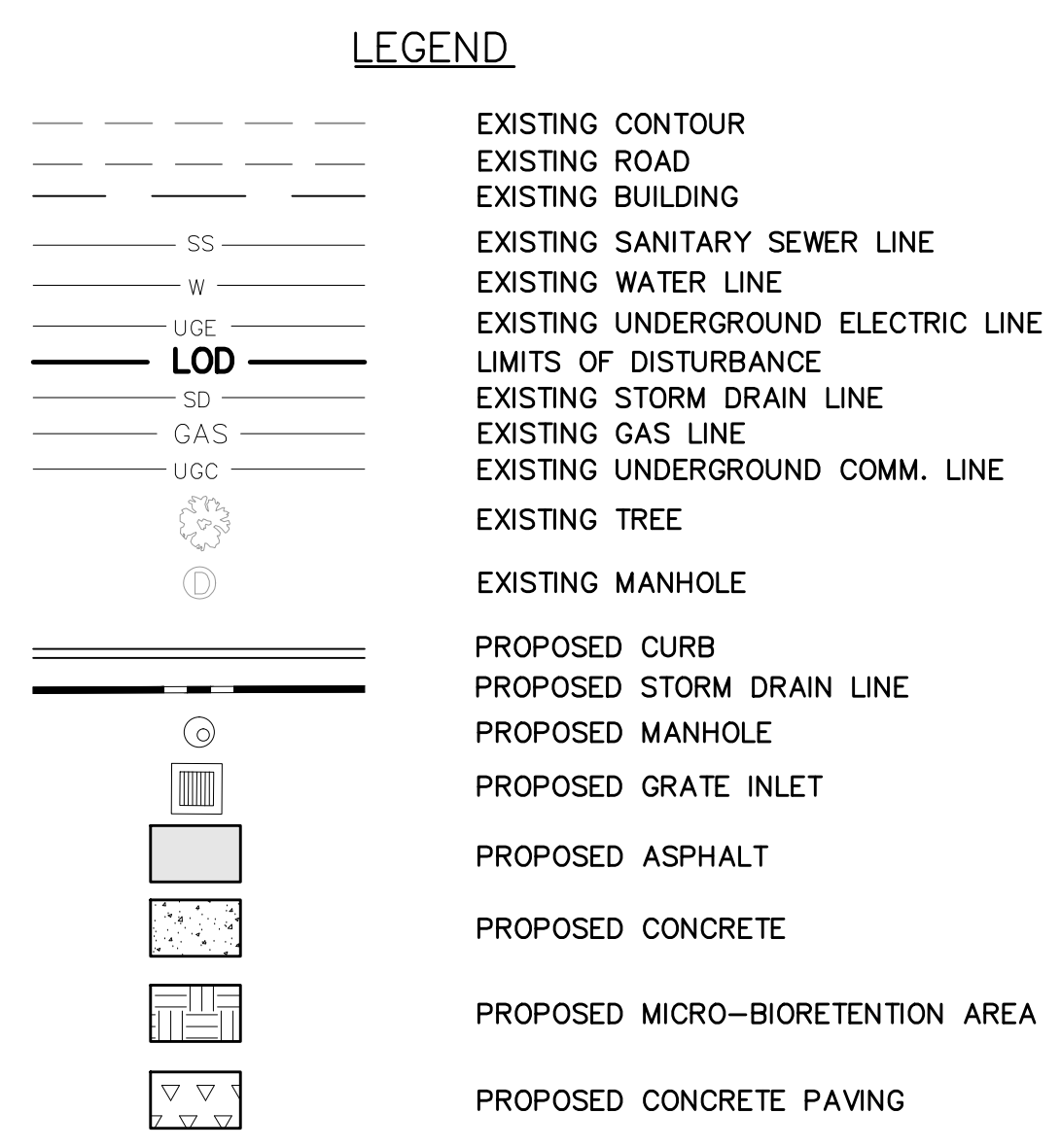
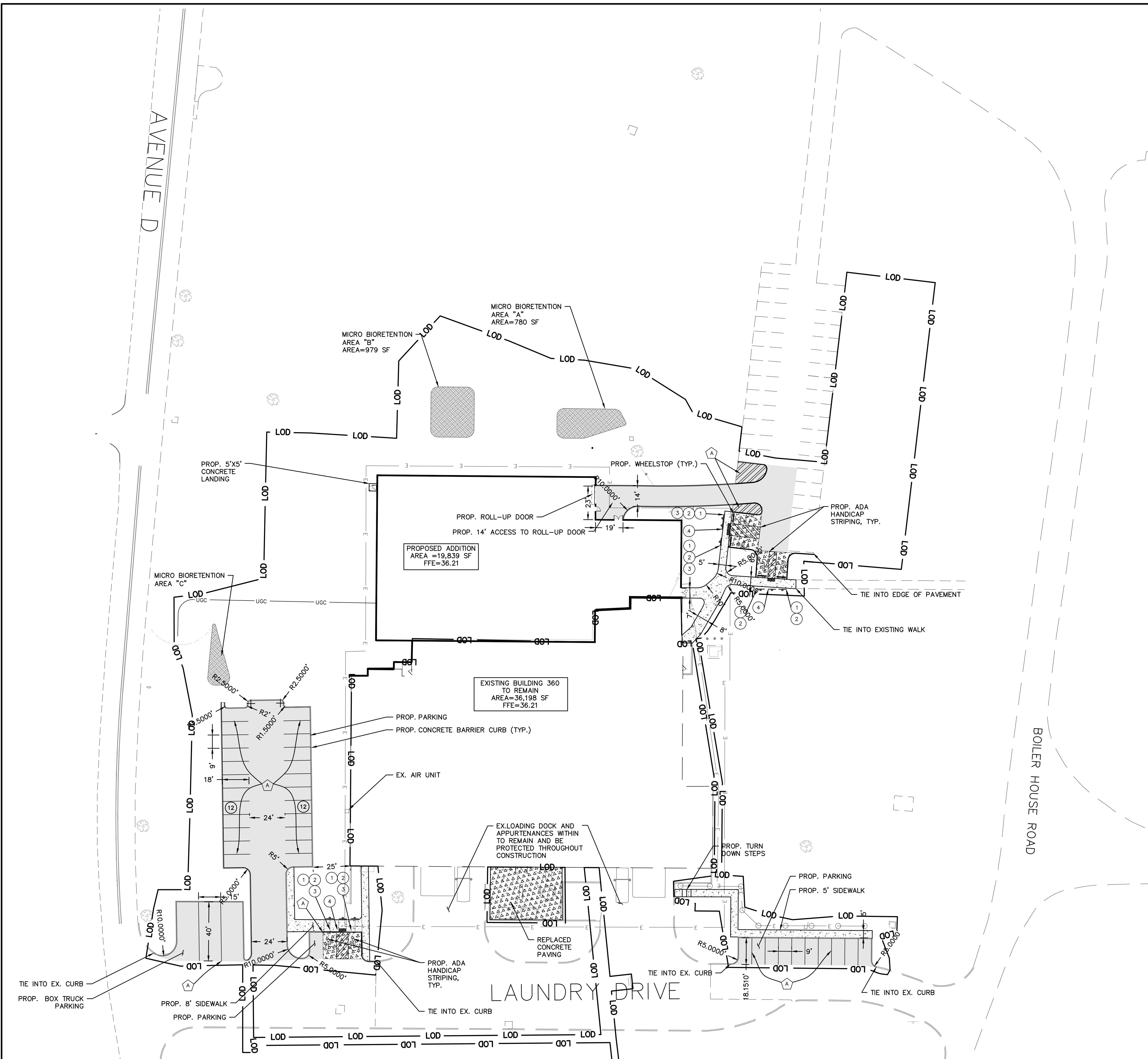
Drawing Number  
**CU-005**  
OF XX



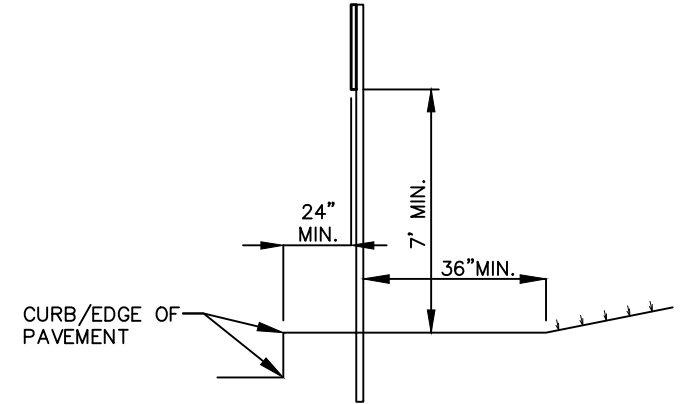




THREE INCHES = ONE FOOT (3" = 1'-0")  
ONE AND ONE HALF INCHES = ONE FOOT (1 1/2" = 1'-0")  
ONE INCH = ONE FOOT (1" = 1'-0")  
THREE QUARTERS INCH = ONE FOOT (3/4" = 1'-0")  
ONE HALF INCH = ONE FOOT (1/2" = 1'-0")  
THREE EIGHTHS INCH = ONE FOOT (3/8" = 1'-0")  
ONE QUARTER INCH = ONE FOOT (1/4" = 1'-0")  
ONE EIGHT INCH = ONE FOOT (1/8" = 1'-0")



- SIGNING AND PAVEMENT MARKING NOTES**
- ALL PROPOSED SIGNING AND PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH THE MOST CURRENT EDITION OF EACH OF THE FOLLOWING AND ANY REVISIONS THERETO:  
A. MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.  
B. THE MARYLAND STATE HIGHWAYS STANDARD SIGN BOOK.  
C. THE MARYLAND STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.  
D. THE AMERICAN WITH DISABILITIES ACT AND THE MARYLAND ACCESSIBILITY CODE.
  - PROPOSED SIGN LOCATIONS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO AVOID CONFLICT WITH UNDERGROUND UTILITIES OR OTHER OBSTRUCTIONS, AND TO COMPLY WITH STANDARDS REFERENCED IN NOTE 1.
  - ANY EXISTING PAVEMENT MARKINGS, WHICH WILL CONFLICT WITH PROPOSED PAVEMENT MARKINGS, SHALL BE GROUND OUT.
  - LIMITS OF PROPOSED PAVEMENT MARKINGS ARE APPROXIMATE AND SHALL BE MODIFIED IN THE FIELD TO INSURE THE PROPOSED PAVEMENT MARKINGS CONTINUE UNTIL EXISTING PAVEMENT MARKINGS CAN BE MATCHED.
  - FIRE LANE SIGNS AND STRIPING SHALL BE IN ACCORDANCE WITH MCFRS GUIDELINES.



**SIGN PLACEMENT DIAGRAM**  
N.T.S.

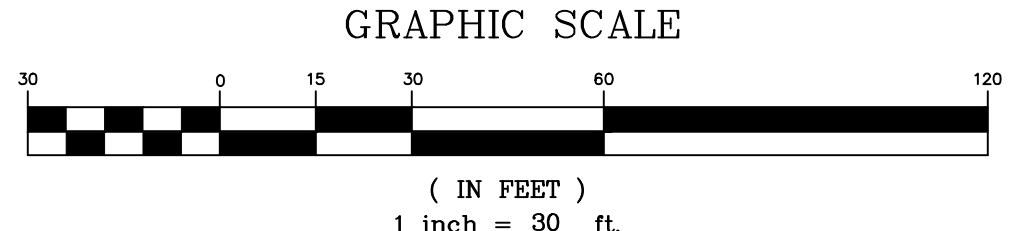
**PAVEMENT MARKING LEGEND**

|   |  |   |
|---|--|---|
| A |  | PARKING SPACE, SOLID WHITE, 4" WIDTH      |
| B |  | SOLID WHITE, 12" WIDTH, 2' GAP, 45° ANGLE |

|          |           |          |          |
|----------|-----------|----------|----------|
| SIGN NO. | 1         | SIGN NO. | 2        |
| SIGN     |           | SIGN     |          |
| STD. NO. | R7-8      | STD. NO. | R7-8(3)  |
| SIZE     | 12" X 18" | SIZE     | 12" X 9" |

|          |          |          |                     |
|----------|----------|----------|---------------------|
| SIGN NO. | 3        | SIGN NO. | 4                   |
| SIGN     |          | SIGN     |                     |
| STD. NO. | R7-8A    | STD. NO. | R8-1(2)             |
| SIZE     | 18" X 9" | SIZE     | 12" X 18", 12" X 6" |

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|   |          |
|---|----------|
| Additions:                              | Date     |
|   |          |
|   |          |
|   |          |
|   |          |
| Revisions:                              | Date     |
| SCHEMATIC DESIGN (30% SUBMISSION)       | 09/11/15 |
| DESIGN DEVELOPMENT (60% SUBMISSION)     | 11/23/15 |
| CONSTRUCTION DOCUMENTS (90% SUBMISSION) | 03/17/16 |
| BID DOCUMENTS (100% SUBMISSION)         |          |

**ARCHITECT / ENGINEERS / CONSULTANTS:**

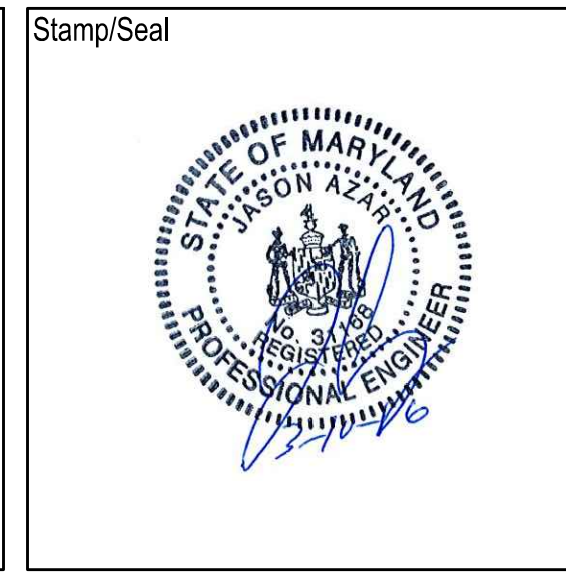
OKKS Studios, Inc.  
2 Wisconsin Circle / Suite 820  
Chevy Chase, MD 20815-7003  
Tel: (301) 718-0080  
Fax: (301) 718-9520  
www.okksstudios.com

Henry Adams Consulting  
Engineers, LLC  
600 Baltimore Avenue, 4th Floor  
Baltimore, MD 21204  
Tel: (410) 296-6500  
Fax: (410) 296-6501

Nobis Engineering, Inc.  
20410 Century Boulevard, Suite 230  
Germantown, MD 20874  
Tel: (301) 528-2010

The Protection Engineering Group  
2809 Boston Street, Suite 7  
Baltimore, MD 21224 USA  
Tel: (443) 708-4096  
Fax:

Woods Peacock Engineering Consultants  
5250 Cherokee Avenue, Suite 420  
Alexandria, VA 22312-20532  
Tel: (703) 658-4400  
Fax: (703) 658-4404

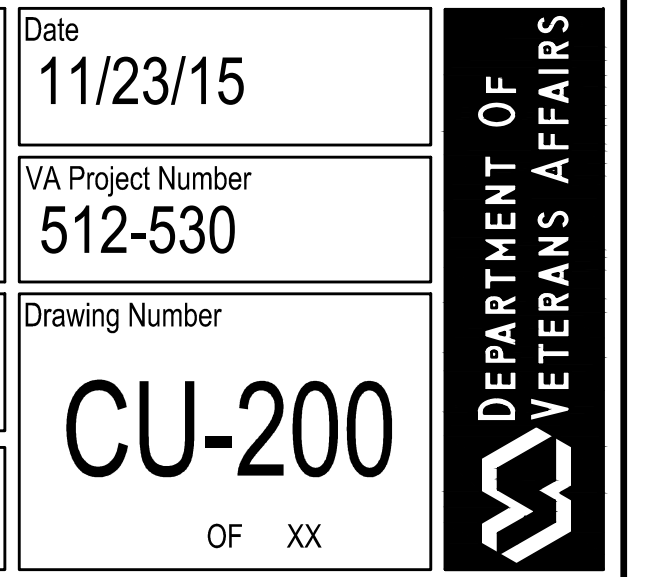


|           |   |
|-----------|---|
| Approved: | Approved: Chief, Facilities and Engineering                           |
|           | Approved: Associate Chief for Maintenance And Operations, Perry Point |
|           | Approved: Engineering Projects Supervisor                             |
|           | Approved: Infection Control Officer                                   |

|   |   |
|---|---|
| Approved: Chief, Facilities and Engineering                           | Drawing Title                               |
| Approved: Associate Chief for Maintenance And Operations, Perry Point | <b>SITE PLAN</b>                            |
| Approved: Engineering Projects Supervisor                             | Approved: Associate Director for Operations |
| Approved: Infection Control Officer                                   | Approved: Director, Medical Center          |

|   |                 |                 |         |       |
|---|-----------------|-----------------|---------|-------|
| Project Title                               | Scale           | Building Number | Checked | Drawn |
| <b>WAREHOUSE RENOVATION &amp; EXPANSION</b> |                 | 360             | JA      | DWC   |
| Location                                    | PERRY POINT, MD |                 |         |       |

|                   |          |
|-------------------|----------|
| Date              | 11/23/15 |
| VA Project Number | 512-530  |
| Drawing Number    | CU-200   |
| OF XX             |          |





|                   |          |
|-------------------|----------|
| Date              | 11/23/15 |
| VA Project Number | 512-530  |
| Drawing Number    | CU-205   |
|                   | OF XX    |



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ONE INCH = ONE FOOT (1" = 1'-0")

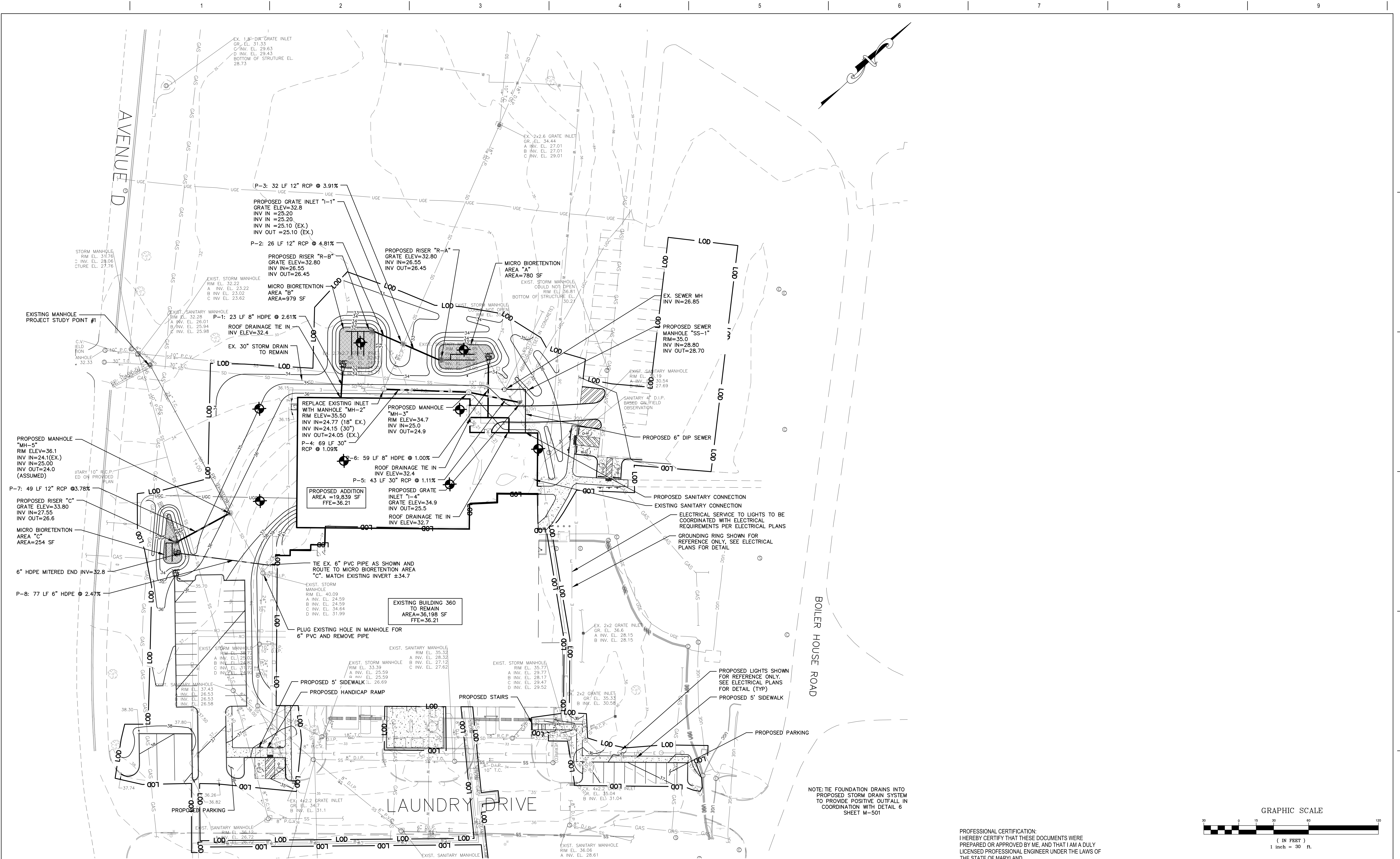
THREE QUARTERS INCH = ONE FOOT (3/4" = 1'-0")

ONE HALF INCH = ONE FOOT (1/2" = 1'-0")

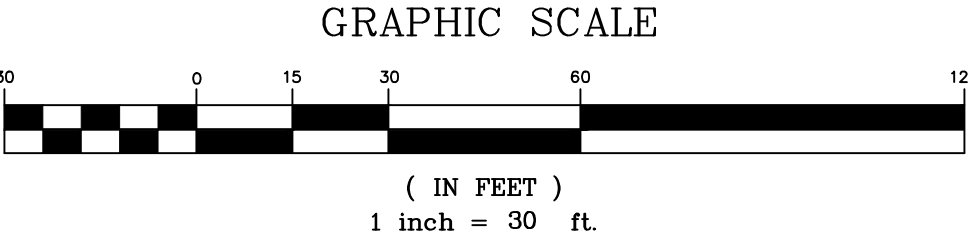
THREE EIGHTHS INCH = ONE FOOT (3/8" = 1'-0")

ONE QUARTER INCH = ONE FOOT (1/4" = 1'-0")

ONE EIGHTH INCH = ONE FOOT (1/8" = 1'-0")



NOTE: TIE FOUNDATION DRAINS INTO PROPOSED STORM DRAIN SYSTEM TO PROVIDE POSITIVE OUTFALL IN COORDINATION WITH DETAIL 6 SHEET M-501



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| Additions:                              | Date     |
|---|----------|
|   |          |
|   |          |
|   |          |
|   |          |
| Revisions:                              | Date     |
| SCHEMATIC DESIGN (30%) SUBMISSION       |          |
| DESIGN DEVELOPMENT (60%) SUBMISSION     | 09/11/15 |
| CONSTRUCTION DOCUMENTS (90% SUBMISSION) | 11/23/15 |
| BID DOCUMENTS (100% SUBMISSION)         | 03/17/16 |

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| Approved: |
|-----------|
|           |
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|           |
|           |

|   |
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| Approved: Chief, Facilities and Engineering                           |
| Approved: Associate Chief for Maintenance And Operations, Perry Point |
| Approved: Engineering Projects Supervisor                             |
| Approved: Infection Control Officer                                   |
|   |

| Drawing Title                               |
|---|
| GRADING AND UTILITY PLAN                    |
| Approved: Associate Director for Operations |
| Approved: Director, Medical Center          |

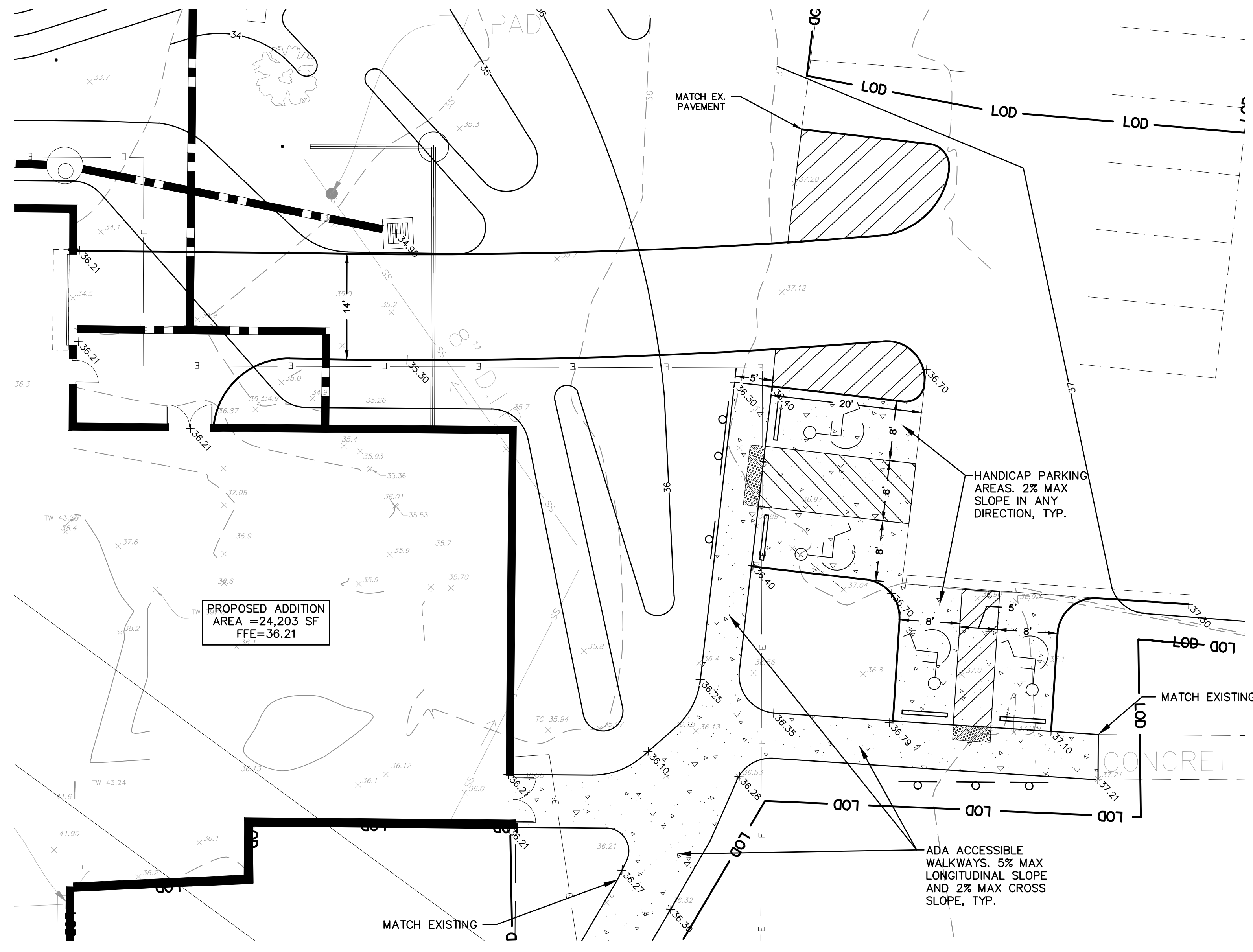
| FULLY SPRINKLERED                                 |                        |               |              |
|---|------------------------|---------------|--------------|
| Project Title<br>WAREHOUSE RENOVATION & EXPANSION |                        |               |              |
| Scale   | Building Number<br>360 | Checked<br>JA | Drawn<br>DWC |
| Location<br>PERRY POINT, MD                       |                        |               |              |

|                              |
|------------------------------|
| Date<br>11/23/15             |
| VA Project Number<br>512-530 |
| Drawing Number<br>CU-300     |
| OF XX                        |

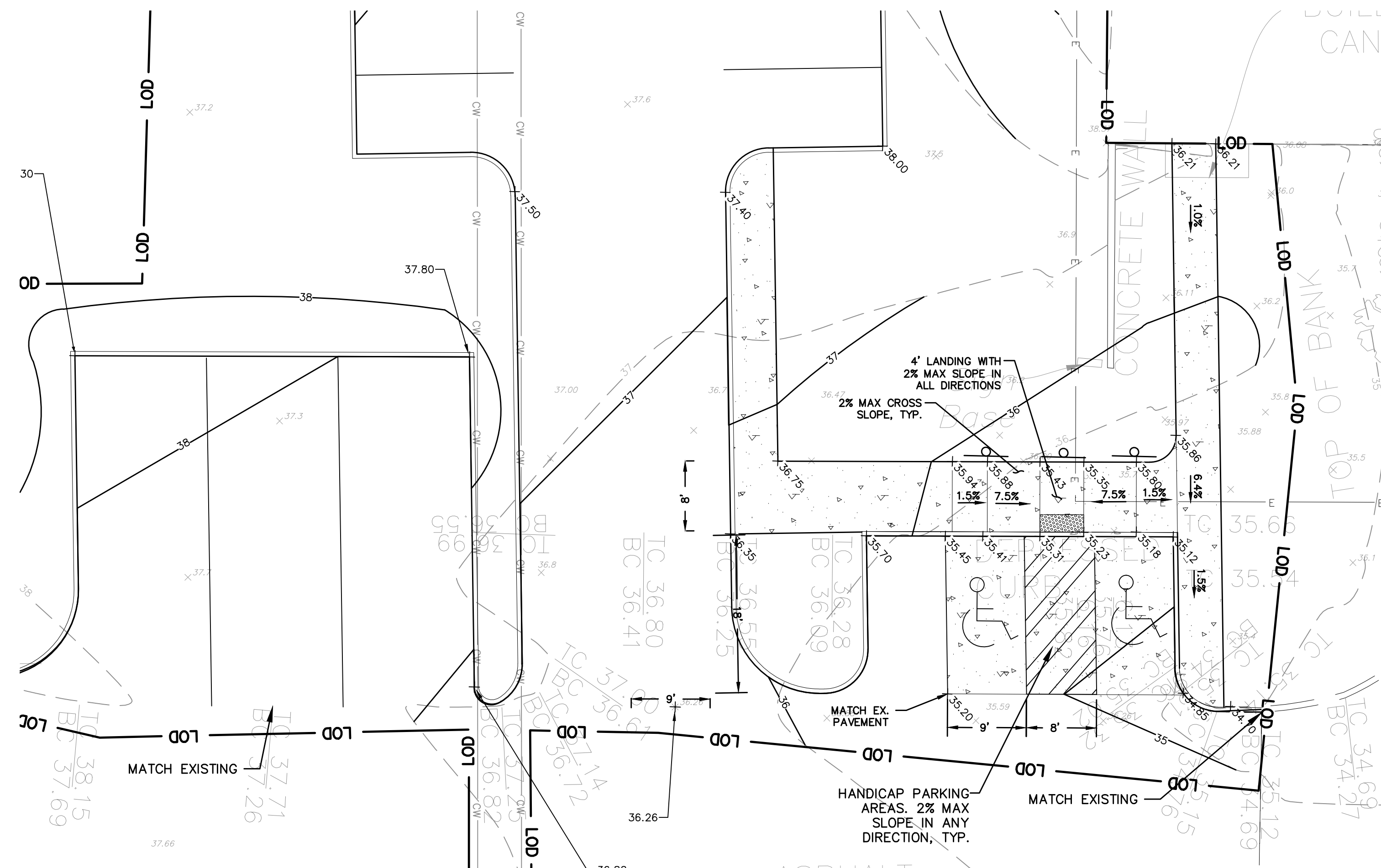
DEPARTMENT OF VETERANS AFFAIRS



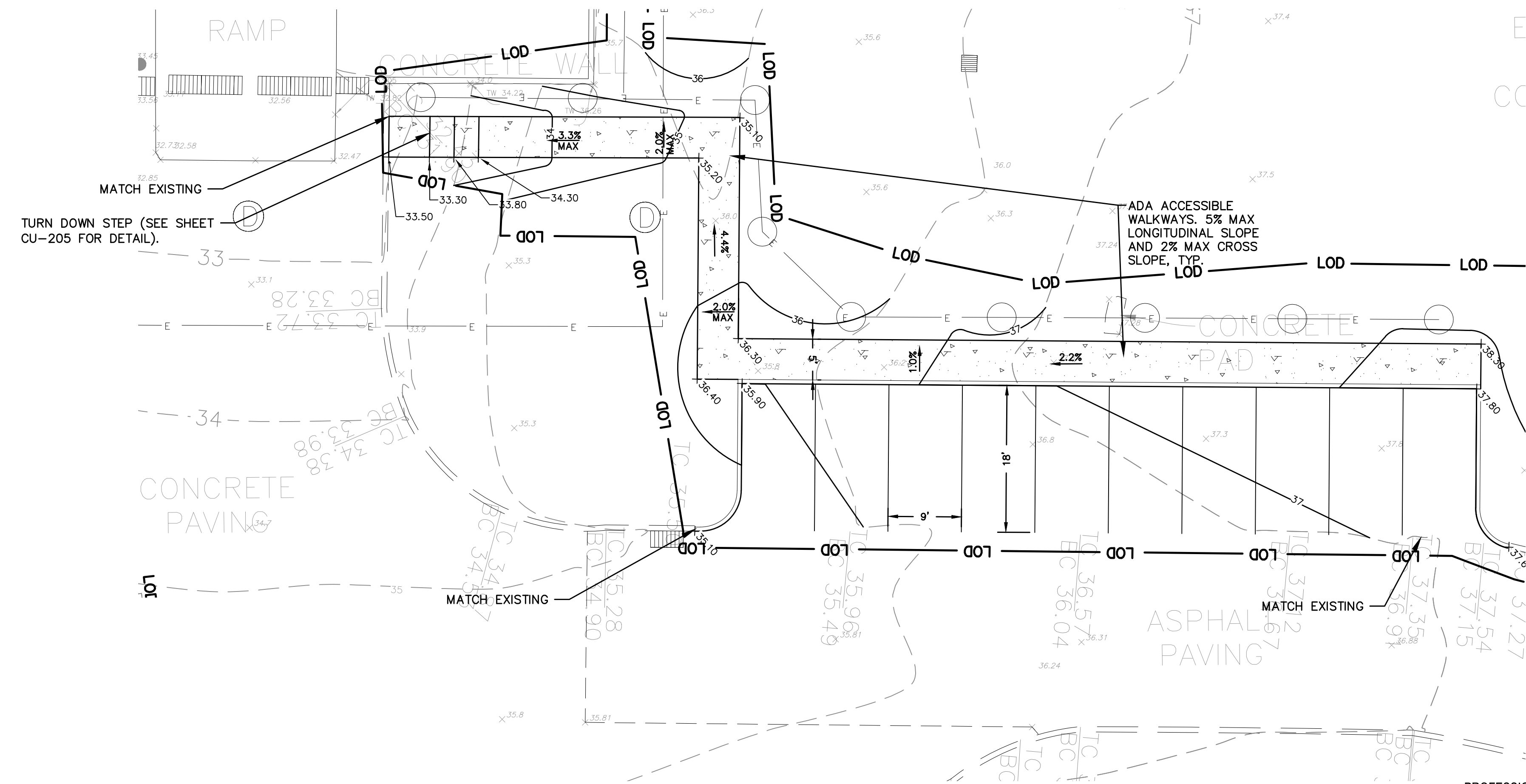
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**A** HANDICAP PARKING IN EXISTING PARKING LOT  
SCALE: 1" = 10'

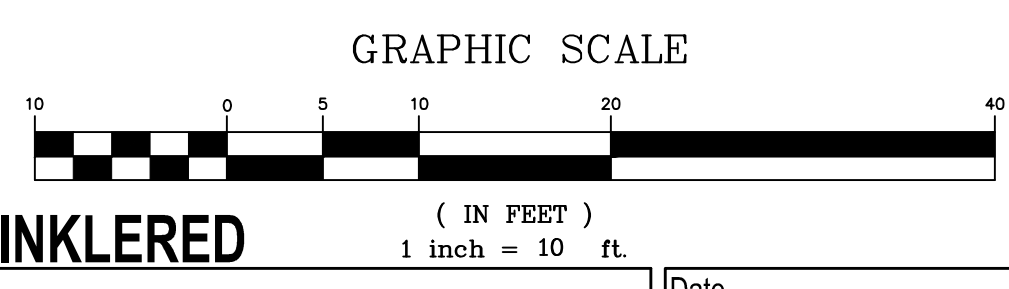


**B** HANDICAP PARKING SOUTH OF BUILDING 360  
SCALE: 1" = 10'



**C** PROPOSED PARKING AREA SOUTHEAST OF BUILDING 360  
SCALE: 1" = 10'

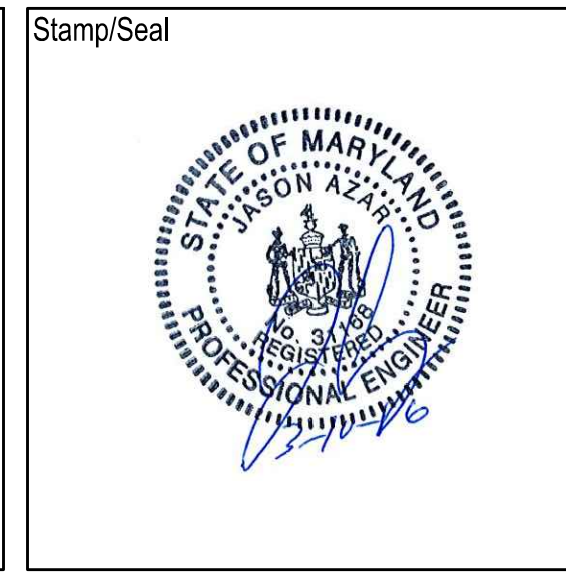
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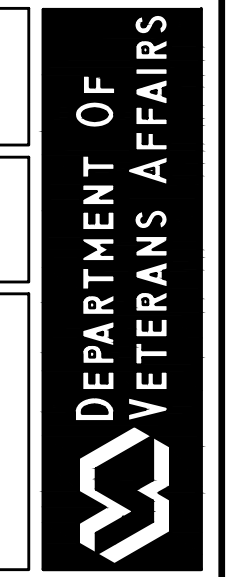
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|           |   |
|           | Approved: Engineering Projects Supervisor                             |
|           |   |
|           | Approved: Infection Control Officer                                   |
|           |   |

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| Approved: Associate Chief for Maintenance And Operations, Perry Point |
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| Approved: Engineering Projects Supervisor                             |
|   |
| Approved: Infection Control Officer                                   |
|   |

|   |
|---|
| Drawing Title                               |
| <b>GRADING DETAILS</b>                      |
| Approved: Associate Director for Operations |
|   |
| Approved: Director, Medical Center          |
|   |

|   |                 |         |       |
|---|-----------------|---------|-------|
| <b>FULLY SPRINKLERED</b>                    |                 |         |       |
| Project Title                               |                 |         |       |
| <b>WAREHOUSE RENOVATION &amp; EXPANSION</b> |                 |         |       |
| Scale                                       | Building Number | Checked | Drawn |
|   | 360             | JA      | DWC   |
| Location                                    |                 |         |       |
| PERRY POINT, MD                             |                 |         |       |

|                   |
|-------------------|
| Date              |
| 11/23/15          |
| VA Project Number |
| 512-530           |
| Drawing Number    |
| <b>CU-301</b>     |
| OF XX             |







DEPARTMENT OF  
VETERANS AFFAIRS



| Structure | Type   | Rim Elevation | Invert In  | Invert Out |
|-----------|--|---------------|------------|------------|
| R-A       | SHA Precast Yard Inlet SHA Std. No. MD 381.02  | 32.80         | 26.55      | 26.45      |
| R-B       | SHA Precast Yard Inlet SHA Std. No. MD 381.02  | 32.80         | 26.55      | 26.45      |
| R-C       | SHA Precast Yard Inlet SHA Std. No. MD 381.02  | 33.80         | 27.55      | 26.60      |
| I-1       | SHA WR Inlet SHA Std. No. MD 374.04            | 32.80         | 25.20      | 25.10      |
| MH-2      | 60" SHA Precast Manhole SHA Std. No. MD 384.03 | 35.50         | 24.77      | 24.05      |
| MH-3      | 60" SHA Precast Manhole SHA Std. No. MD 384.03 | 34.7          | 25.00      | 24.9       |
| I-4       | SHA WR Inlet SHA Std. No. MD 374.04            | 34.90         | ---        | 25.50      |
| MH-5      | 60" SHA Precast Manhole SHA Std. No. MD 384.03 | 36.1          | 24.1 (Ex.) | 24.00      |
|           |  |               | 25.00      |            |

1 PRIVATE STRUCTURE SCHEDULE - STORM  
NOT TO SCALE

| Label | Pipe Length (ft) | Pipe Size (in) | Material | Type      |
|-------|------------------|----------------|----------|-----------|
| P-1   | 22               | 8              | HDPE     | N-12      |
| P-2   | 26               | 12             | RCP      | CLASS III |
| P-3   | 32               | 12             | RCP      | CLASS III |
| P-4   | 69               | 30             | RCP      | CLASS III |
| P-5   | 43               | 30             | RCP      | CLASS III |
| P-6   | 59               | 8              | HDPE     | N-12      |
| P-7   | 49               | 12             | RCP      | CLASS III |
| P-8   | 76               | 8              | HDPE     | N-12      |

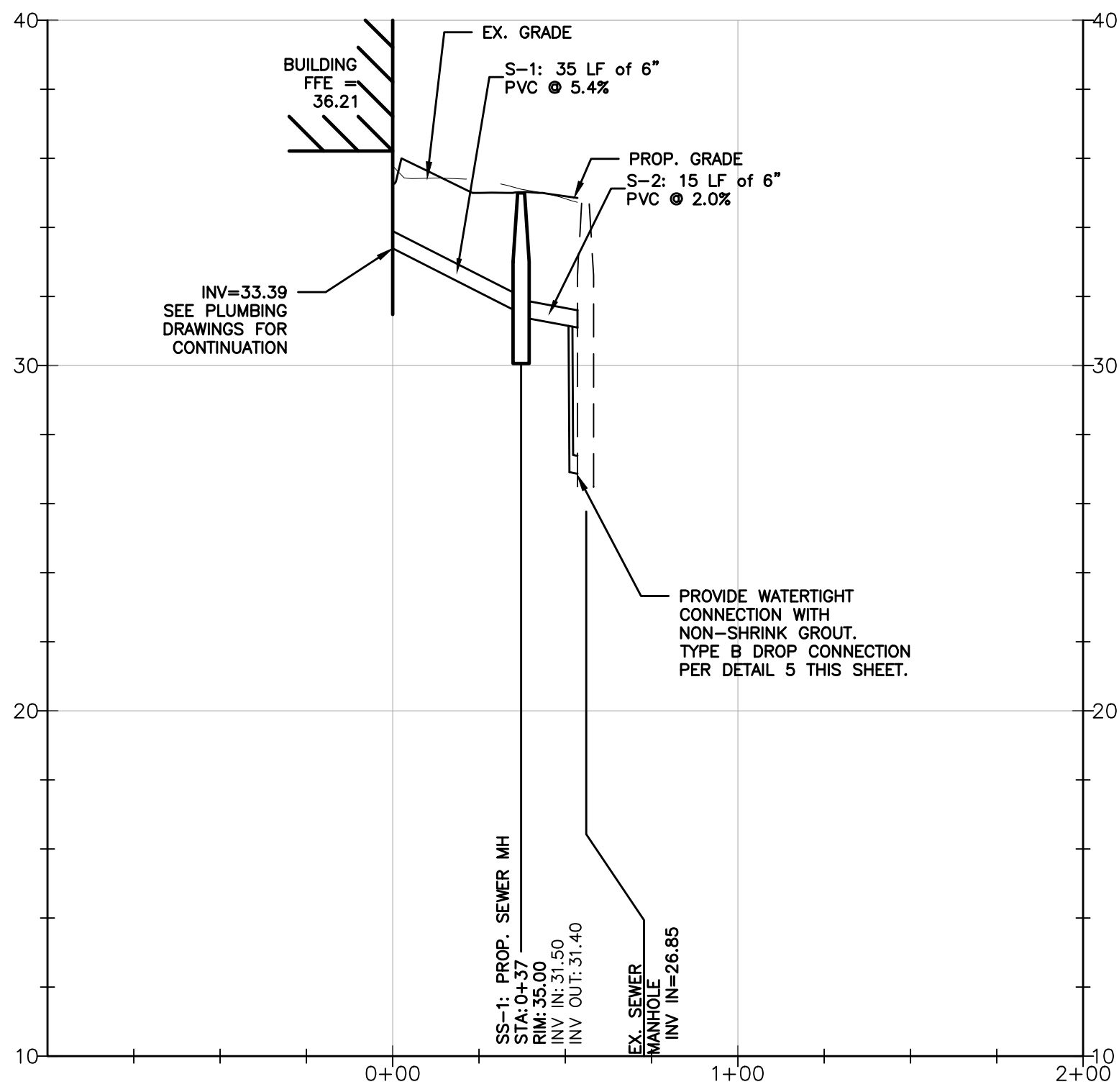
2 PRIVATE PIPE SCHEDULE - STORM  
NOT TO SCALE

| Structure | Type   | Rim Elevation | Invert In | Invert Out |
|-----------|--|---------------|-----------|------------|
| SS-1      | Cecil County MD 48" Precast Manhole STD. S-2 | 35.00         | 32.69     | 27.15      |

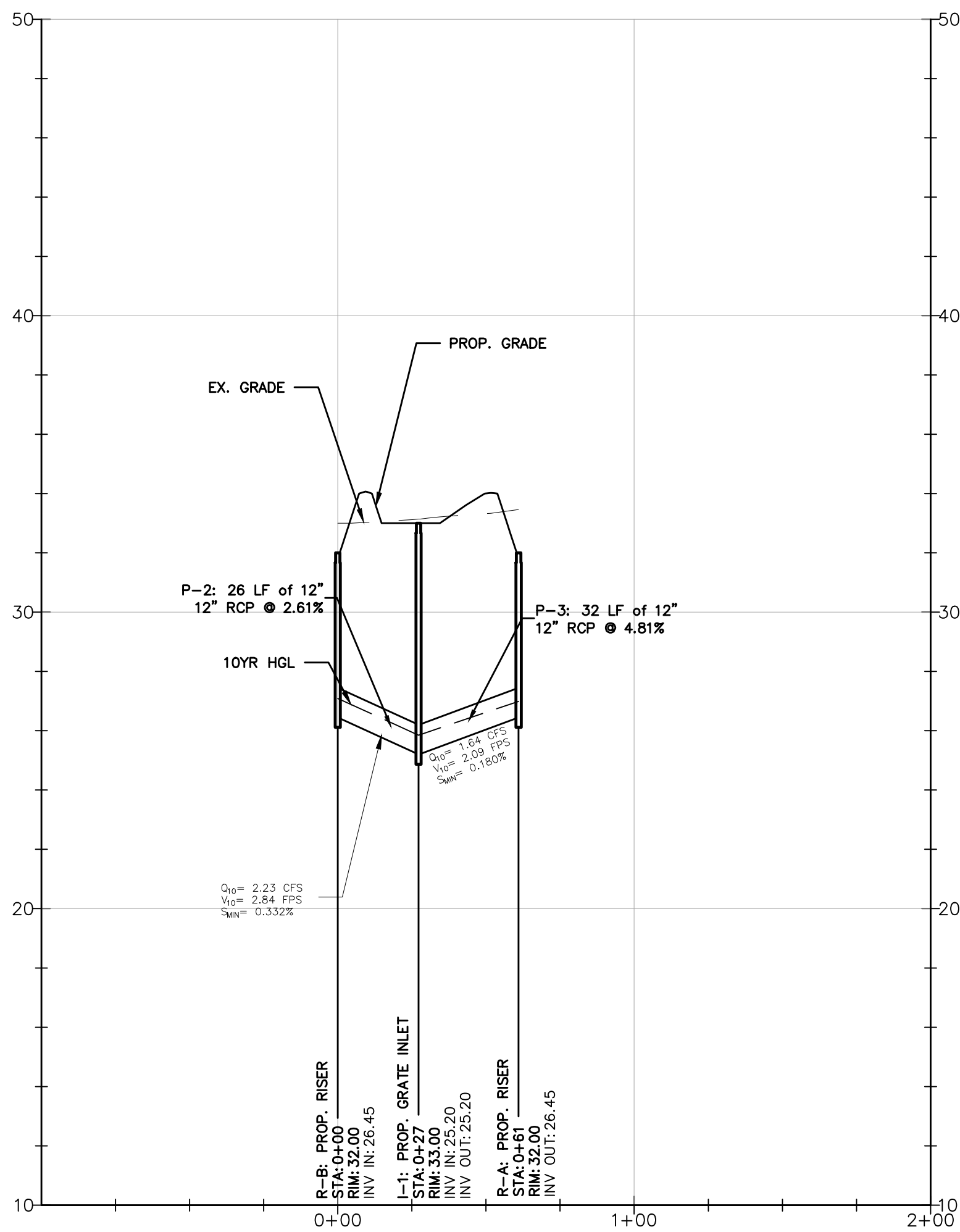
3 PRIVATE STRUCTURE SCHEDULE - SANITARY  
NOT TO SCALE

| Label | Pipe Length (ft) | Pipe Size (in) | Material | Type   |
|-------|------------------|----------------|----------|--------|
| S-1   | 35               | 6              | PVC      | SDR 35 |
| S-2   | 15               | 6              | PVC      | SDR 35 |

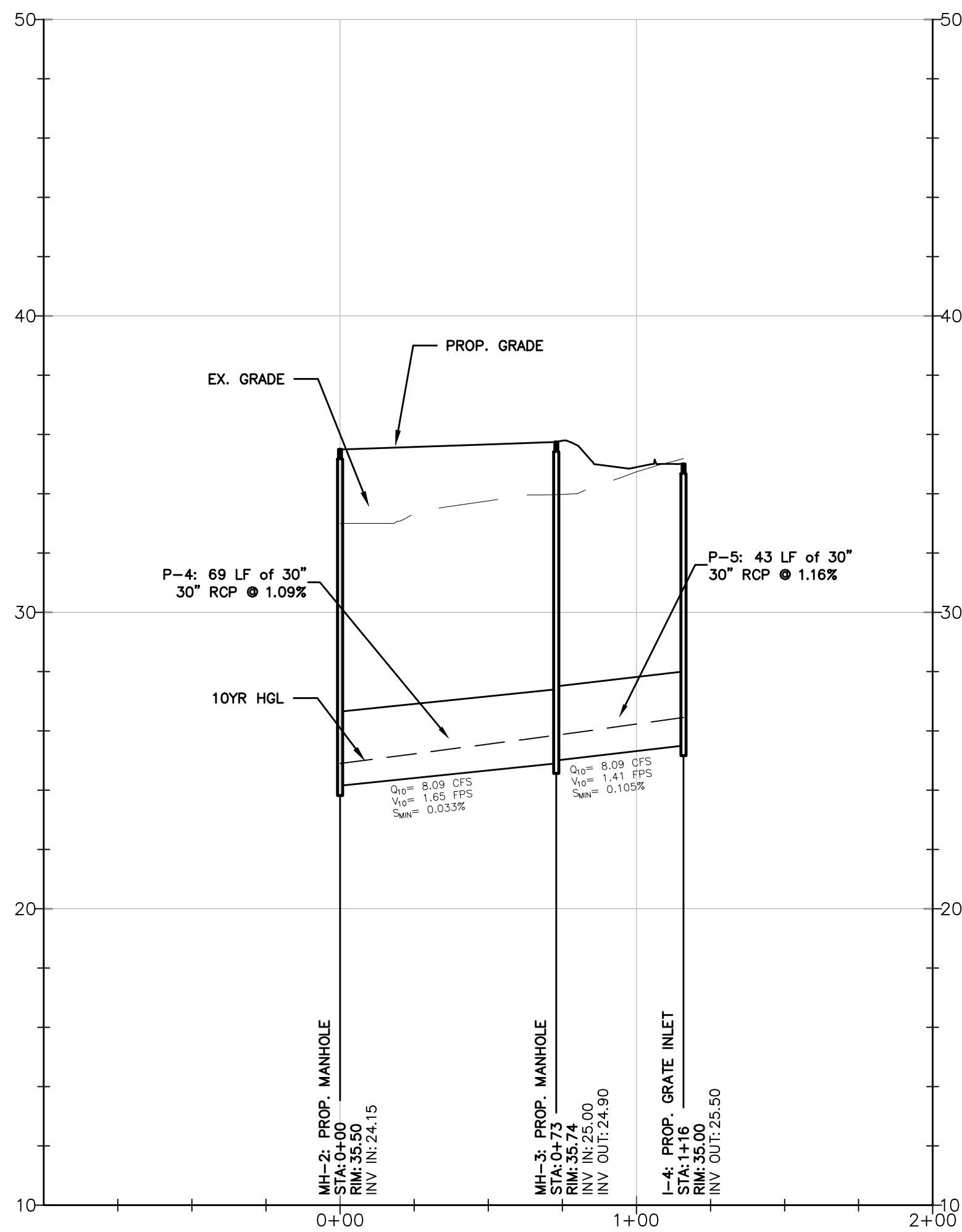
4 PRIVATE PIPE SCHEDULE - SANITARY  
NOT TO SCALE



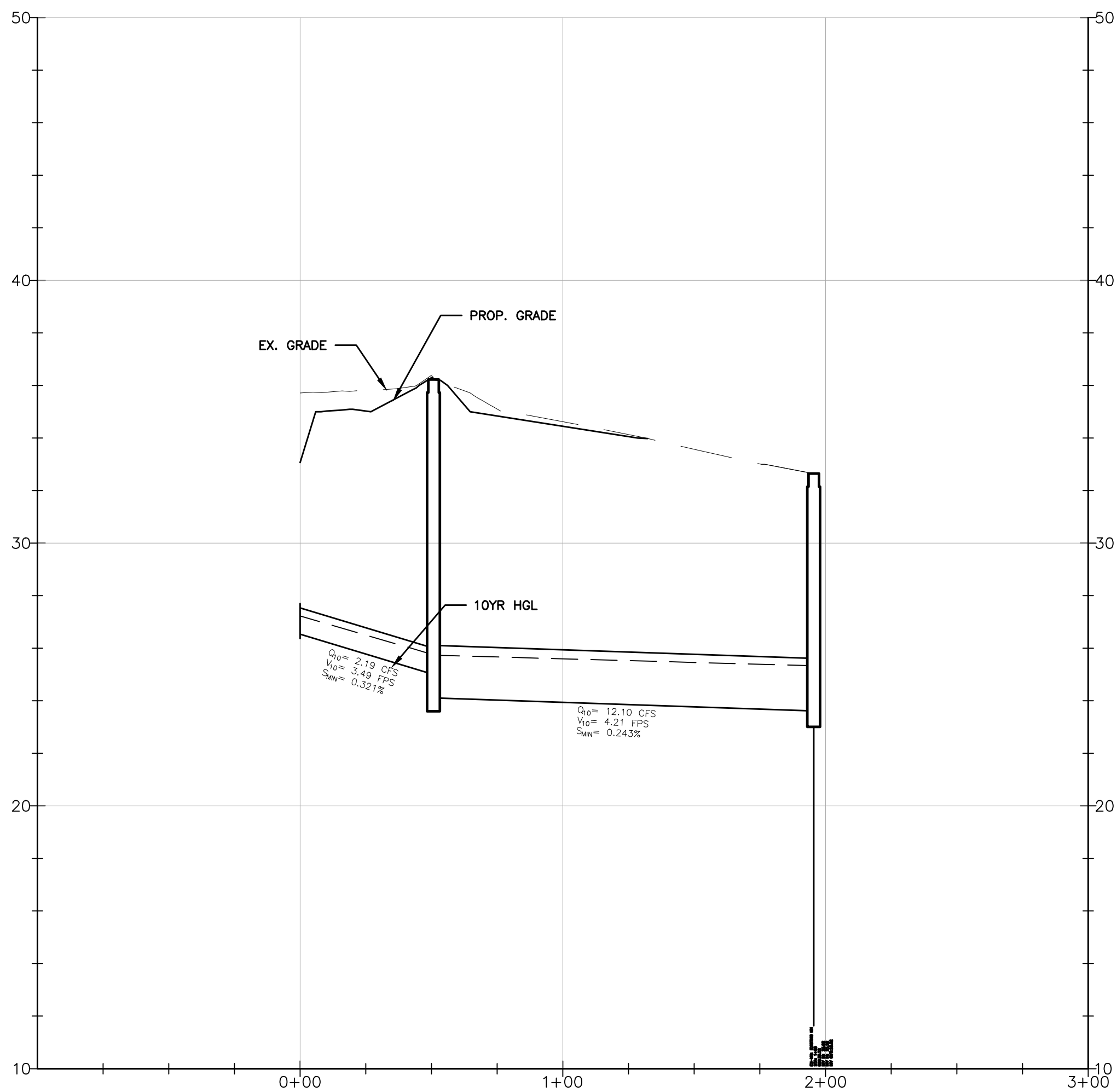
SEWER PROFILE  
SCALE: 1"=40' (HOR) 1"=4' (VER)



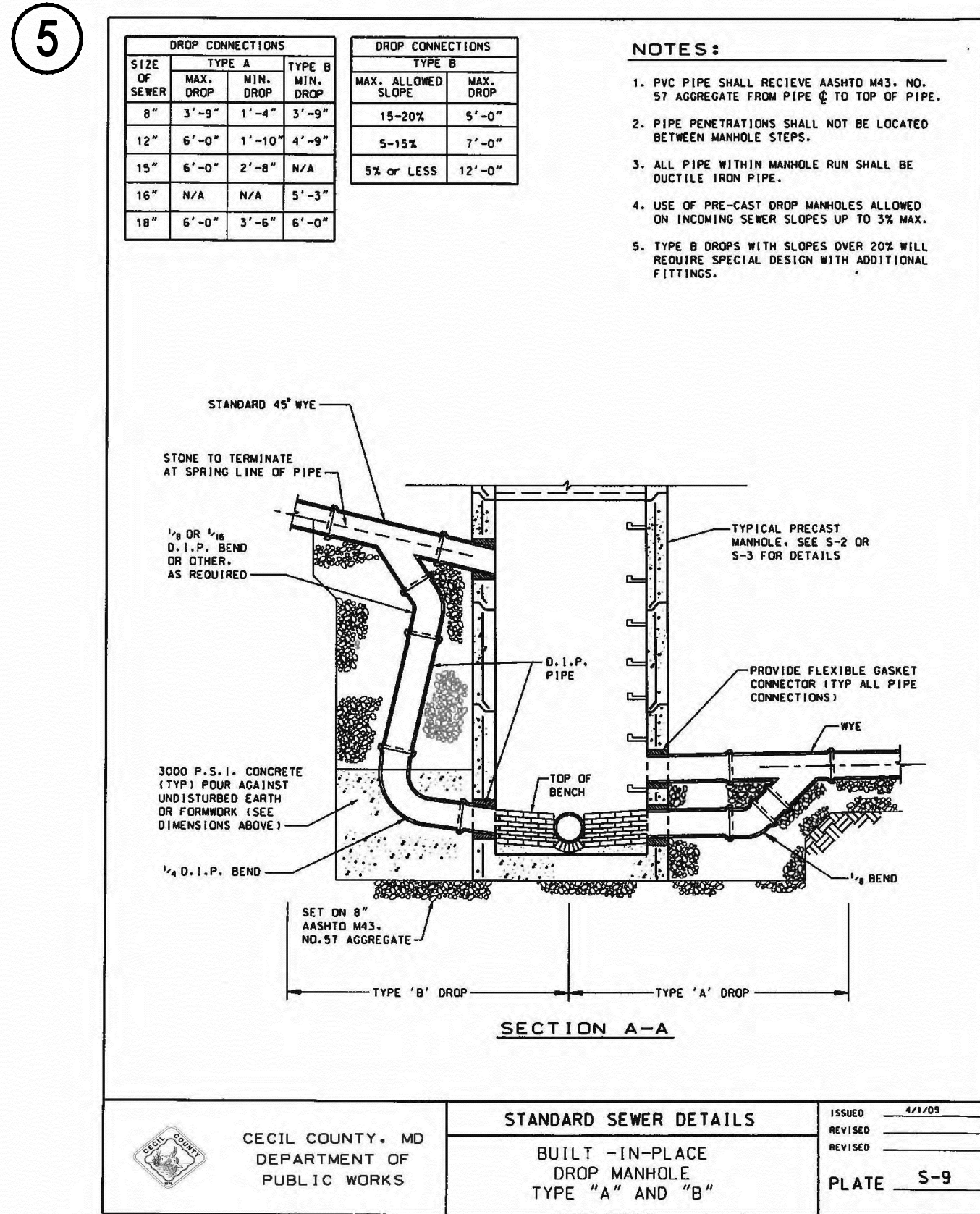
STORM DRAIN PROFILE FROM R-B AND R-A TO I-1  
SCALE: 1"=40' (HOR) 1"=4' (VER)



STORM DRAIN PROFILE FROM I-4 TO MH-2  
SCALE: 1"=40' (HOR) 1"=4' (VER)



STORM DRAIN PROFILE FROM R-C TO EX-MH  
SCALE: 1"=40' (HOR) 1"=4' (VER)



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WAREHOUSE RENOVATION  
& EXPANSION

Date  
11/23/15

VA Project Number  
512-530

Drawing Number  
CU-306

OF XX

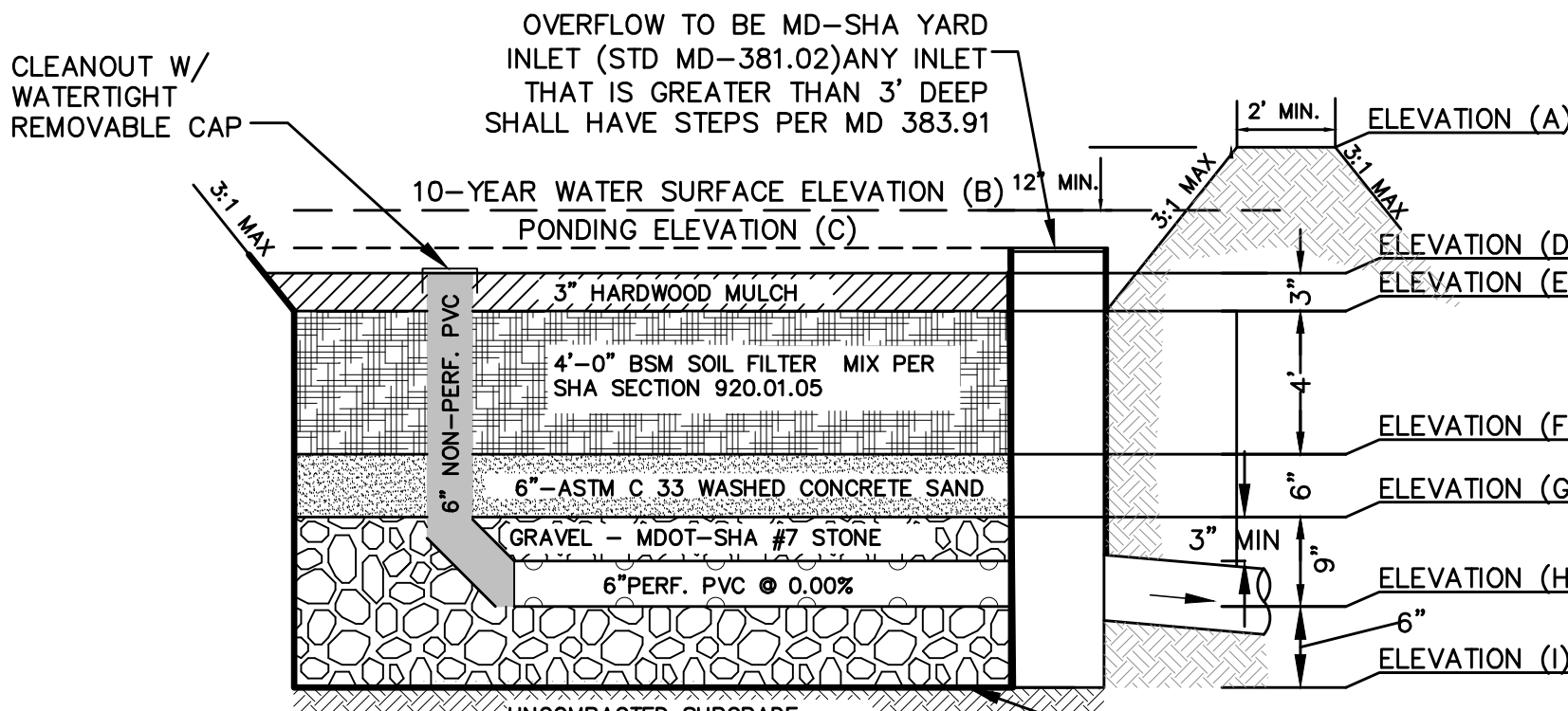
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THREE SIXTEENTHS INCH=ONE FOOT (3/16"=1'-0")  
ONE EIGHTH INCH=ONE FOOT (1/8"=1'-0")  
ONE SIXTEENTH INCH=ONE FOOT (1/16"=1'-0")

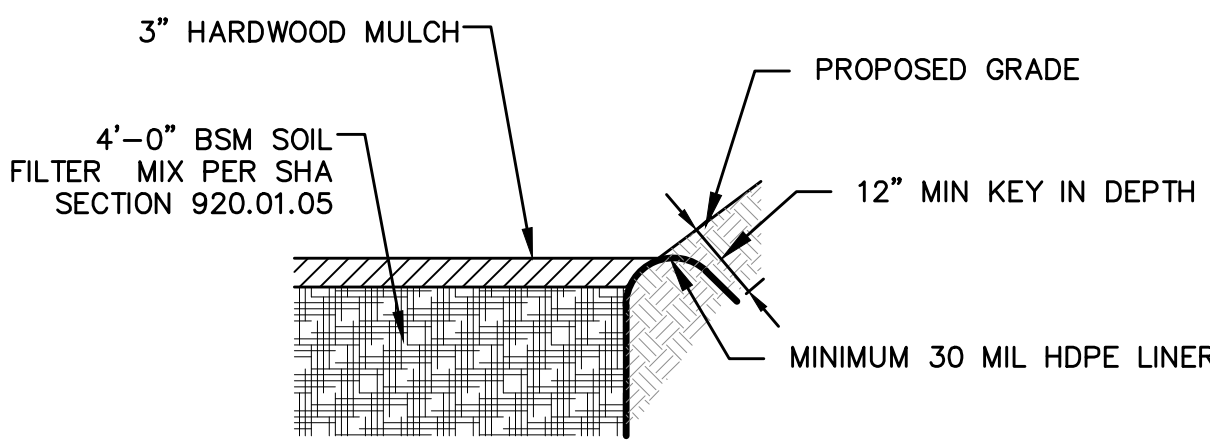


- NOTES :
1. RISER GRATE TO SERVE AS TRASHRACK. RISER TO BE PRECAST AND MONOLITHICALLY POURED.
  2. SEE TABLE BELOW FOR ELEVATIONS FOR EACH BIO-RETENTION AREA.
  3. UNDERDRAIN SHALL BE WRAPPED IN 1/2" GALVANIZED HARDWARE CLOTH.
  4. HDPE LINER IS ONLY REQUIRED IF GROUNDWATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE MICRO-BIORETENTION FACILITIES.
- 30 MIL HDPE IMPERMEABLE LINER. ALL LINER JOINTS AND CORNERS TO BE EXTRUSION WELDED.

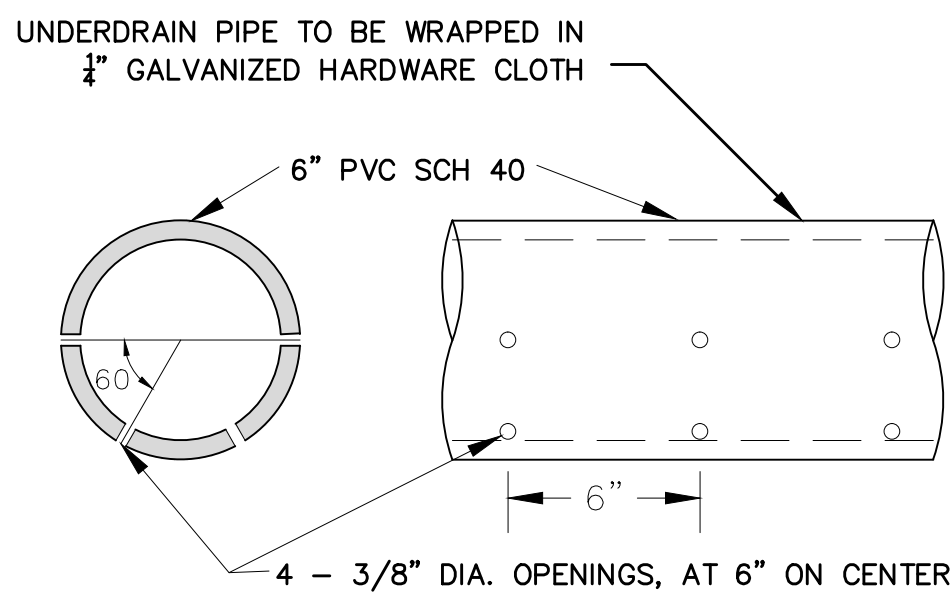
1 TYPICAL BIORETENTION MEDIA SECTION  
NOT TO SCALE

| MICRO-BIORETENTION ELEVATIONS |                           |                           |                           |
|-------------------------------|---------------------------|---------------------------|---------------------------|
| ELEV                          | MICRO BIORETENTION AREA A | MICRO BIORETENTION AREA B | MICRO BIORETENTION AREA C |
| A                             | 34.0                      | 34.0                      | 35.0                      |
| B                             | 33.0                      | 33.0                      | 34.0                      |
| C                             | 32.8                      | 32.8                      | 33.8                      |
| D                             | 32.05                     | 32.05                     | 33.05                     |
| E                             | 31.8                      | 31.8                      | 32.8                      |
| F                             | 27.8                      | 27.8                      | 28.8                      |
| G                             | 27.3                      | 27.3                      | 28.3                      |
| H                             | 26.55                     | 26.55                     | 27.55                     |
| I                             | 26.1                      | 26.1                      | 27.1                      |

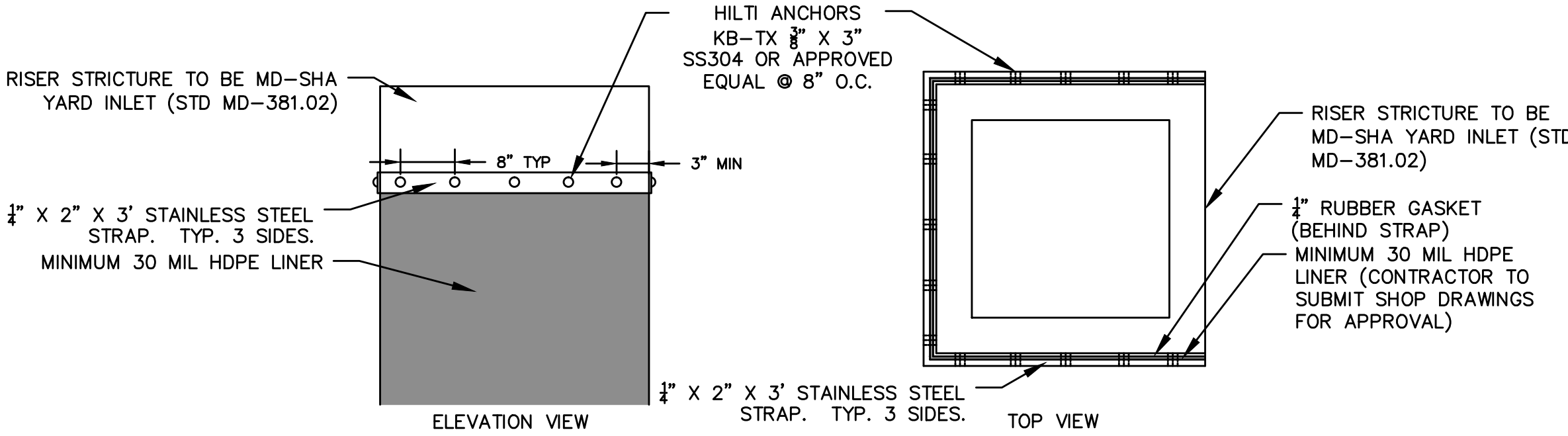
NOTE : SEE CU-310 FOR DETAILS



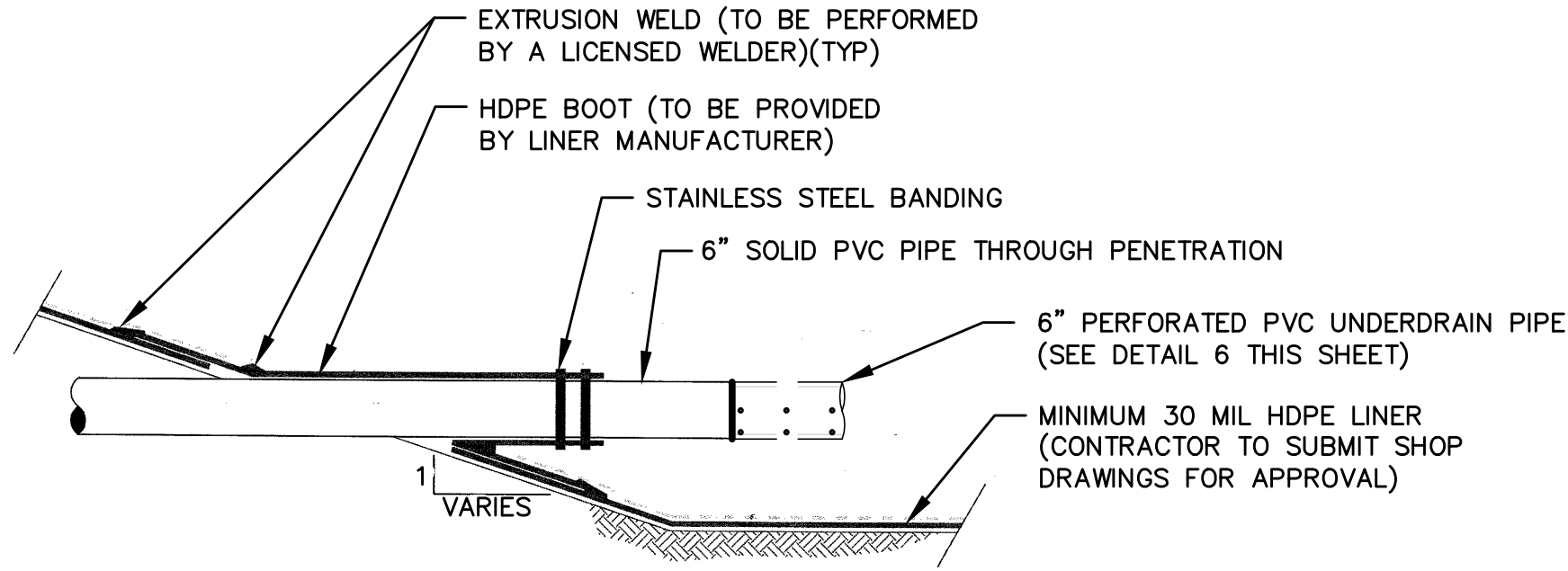
4 LINER KEY-IN DETAIL  
NOT TO SCALE



2 PIPE PERFORATION DETAIL  
NOT TO SCALE



5 LINER CONNECTION AT RISER DETAIL  
NOT TO SCALE



3 HORIZONTAL PIPE PENETRATION OF LINER DETAIL  
NOT TO SCALE

| COMPOSITION - FURNISHED SUBSOIL |             |                                 |
|---------------------------------|-------------|---------------------------------|
| TEST PROPERTY                   | TEST METHOD | TEST VALUE AND AMENDMENT        |
| Prohibited Weeds                | ---         | 920.01.01                       |
| Debris                          | ---         | 920.01.03                       |
| Grading Analysis                | T 87        | 920.01.03                       |
| Textural Analysis               | T 88        | 920.01.03                       |
| Soil pH                         | D 4972      | 920.01.03                       |
| Organic Matter                  | T 194       | 920.01.03                       |
| Soluble Salts                   | EC1.2 (V/V) | 700 ppm (1.09 mmhos/cm) or less |
| Harmful Materials               | ---         | 920.01.01                       |

- (b) Storage. 920.01.02(b).
- (c) Approval. 920.01.02(c).
- (d) Certification and Delivery. 920.01.02(d).

920.01.05 Bioretention Soil Mix (BSM). A homogeneous mixture composed by loose volume of 5 parts Coarse Sand, 3 parts Base Soil, and 2 parts Fine Bark. BSM shall conform to the following:

- (a) Components. Components of BSM shall be sampled, tested and approved before mixing as follows:
- (1) Coarse Sand. MSMT 356. Coarse Sand shall be washed silica sand or crushed glass that conforms to ASTM Fine Aggregate (C-33). Coarse Sand shall include less than 1% by weight of clay or silt size particles, and less than 5% by weight of any combination of diatoms, greystones, calcareous or dolomitic sand.
- (2) Base Soil. Base Soil shall be tested and certified by the producer to conform to the following requirements:

| COMPOSITION - BASE SOIL |             |   |
|-------------------------|-------------|---|
| TEST PROPERTY           | TEST METHOD | TEST VALUE AND AMENDMENT  |
| Prohibited Weeds        | ---         | Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected.                      |
| Debris                  | ---         | No observable content of cement, concrete, asphalt, crushed gravel or construction debris when inspected. |
| Grading Analysis        | T 87        | Sieve Size  |
|                         |             | 2 in. Minimum %   |
|                         |             | No. 4 90  |
| Textural Analysis       | T 88        | Particle Size   |
|                         |             | mm Minimum Maximum  |
|                         |             | Sand 2.0 - 0.050 85 85  |
| Soil pH                 | D 4972      | pH of 5.7 to 6.5  |
|                         |             | Organic Matter  |
|                         |             | T 194 1.0 to 10.0 % by weight.  |
| Soluble Salts           | EC1.2 (V/V) | 500 ppm (1.25 mmhos/cm) or less   |
| Harmful Materials       | ---         | 920.01.01(a)  |

- (3) Fine Bark. Fine Bark shall be the bark of hardwood trees that is milled and screened to a uniform particle size of 2 in. or less. Fine Bark shall be composted and aged for 6 months or longer, and be free from sawdust and foreign materials.

A 1 to 2 lb sample of Fine Bark shall be submitted to the Landscape Operations Division for examination.

- (b) Composition. BSM shall be sampled and tested according to the requirements of MSMT 356 and conform to the following:

| COMPOSITION - BIORETENTION SOIL MIX (BSM) |             |  |
|---|-------------|--|
| TEST PROPERTY                             | TEST METHOD | TEST VALUE AND AMENDMENT   |
| Prohibited Weeds                          | ---         | Free of seed and viable plant parts of species in 920.06.02(a)(b)(c) when inspected. |
| Debris                                    | ---         | 920.01.03(a)(c)  |
| Grading Analysis                          | T 87        | Sieve Size   |
|   |             | 2 in. Minimum %  |
|   |             | No. 4 90   |
| Textural Analysis                         | T 88        | Particle Size  |
|   |             | mm Minimum Maximum   |
|   |             | Sand 2.0 - 0.050 85 85   |
| Soil pH                                   | D 4972      | pH of 5.7 to 7.1   |
|   |             | Organic Matter   |
|   |             | T 194 Minimum 1.5 % by weight.   |
| Soluble Salts                             | EC1.2 (V/V) | 500 ppm (1.25 mmhos/cm) or less  |
|   |             | Harmful Materials  |
|   |             | ---  |

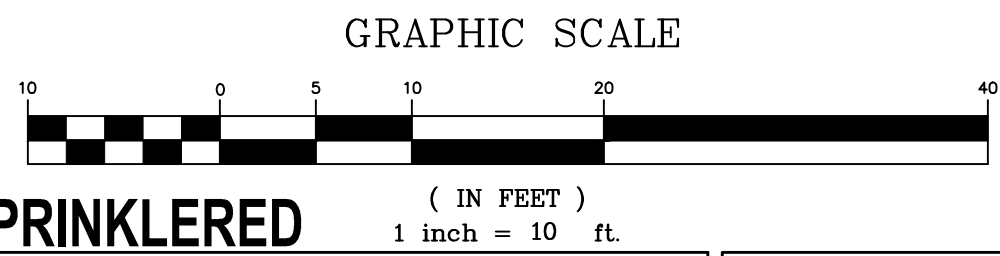
- (c) Amendment or Failure. BSM that does not conform to composition requirements for pH or nutrient analysis shall be amended as specified by the NMP. BSM that exceeds maximum phosphorus concentration or fails other composition requirements will not be accepted, and shall not be delivered or used as BSM.

- (d) Storage. 920.01.02(b). BSM shall be stored in a stockpile that is protected from weather under tarp or shed. BSM stored for 6 months or longer shall be resampled, retested, and reaproved before use.

- (e) Approval. 920.01.02(c).
- (f) Certification and Delivery. 920.01.02(d).

6 BSM MIX SPECIFICATION  
NOT TO SCALE

PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NUMBER: 31168  
EXPIRATION DATE: 11/12/2017



|   |          |                                      |            |           |   |                               |                                  |                   |
|---|----------|--------------------------------------|------------|-----------|---|-------------------------------|----------------------------------|-------------------|
| Revisions:                              | Date     | ARCHITECT / ENGINEERS / CONSULTANTS: | Stamp/Seal | Approved: | Approved: Chief, Facilities and Engineering | Drawing Title                 | Project Title                    | Date              |
| SCHEMATIC DESIGN (30% SUBMISSION)       |          | OKKS Studios, Inc.                   |            |           |   | STORMWATER MANAGEMENT DETAILS | WAREHOUSE RENOVATION & EXPANSION | 11/23/15          |
| DESIGN DEVELOPMENT (60% SUBMISSION)     | 09/11/15 | 2 Wisconsin Circle / Suite 820       |            |           |   |                               |                                  | VA Project Number |
| CONSTRUCTION DOCUMENTS (90% SUBMISSION) | 11/23/15 | Chevy Chase, MD 20815-7003           |            |           |   |                               |                                  | 512-530           |
| BID DOCUMENTS (100% SUBMISSION)         | 03/17/16 | Tel: (301) 718-0080                  |            |           |   |                               |                                  | Drawing Number    |
|   |          | Fax: (301) 718-9520                  |            |           |   |                               |                                  | CU-311            |
|   |          | www.okksstudios.com                  |            |           |   |                               |                                  | OF XX             |
|   |          | Henry Adams Consulting               |            |           |   |                               |                                  |                   |
|   |          | Engineers, LLC                       |            |           |   |                               |                                  |                   |
|   |          | 600 Baltimore Avenue, 4th Floor      |            |           |   |                               |                                  |                   |
|   |          | Baltimore, MD 21204                  |            |           |   |                               |                                  |                   |
|   |          | Tel: (410) 296-6500                  |            |           |   |                               |                                  |                   |
|   |          | Fax: (410) 296-6501                  |            |           |   |                               |                                  |                   |

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| Stamp/Seal | Approved: | Approved: Chief, Facilities and Engineering | Drawing Title                 | Project Title                    | Date              |
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THREE INCHES=ONE FOOT (1"=3')

ONE AND ONE HALF INCHES=ONE FOOT (1 1/2"=1')

ONE INCH=ONE FOOT (1"=1')

ONE HALF INCH=ONE FOOT (1/2"=1/2')

THREE EIGHTHS INCH=ONE FOOT (3/8"=1/3')

ONE HALF INCH=ONE FOOT (1/2"=1/2')

THREE EIGHTHS INCH=ONE FOOT (3/8"=1/3')

THREE EIGHTHS INCH=ONE FOOT (3/8"=1/3')

ONE QUARTER INCH=ONE FOOT (1/4"=1/4')

ONE EIGHTH INCH=ONE FOOT (1/8"=1/8')

BIORETENTION BASIN PLANTING SPECIFICATIONS:

Consists of supplying and planting the trees, shrubs and herbaceous materials (ground covers) including the staking of trees as specified herein and the supplying of materials, labor, equipment and related services necessary for same as specified herein.

The work of this section includes, but is not limited to:

- mulching
- watering
- soil preparation
- planting
- maintenance
- fertilizing
- wrapping
- staking
- plant materials
- replacement

MATERIALS: Wherever the following items appear in the specifications, they shall be as follows:

**Topsoil Texture and Structure:** The planting media shall conform to MD SHA BSM mix per Section 920.01.05. The soil shall be a uniform mix, free of stones, stumps, roots, or other similar objects larger than two (2) inches. No other materials or substances shall be mixed or dumped within the bioretention that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda Grass, Quackgrass, Johnson Grass, Mugwort, Nutsedge, Poison Ivy, Canadian Thistle, Teatrub, or other noxious weeds.

**Soil Testing:** Planting soil for bioretention areas must be tested prior to installation for PH and organic matter. The soil should meet the following criteria (Landscape Contractors Association, Latest Edition).

PH Range: 5.2-7.0  
Organic Matter 1.5-4.0%  
Magnesium: 35 lb/ac  
Phosphorus (phosphate-P<sub>2</sub>O<sub>5</sub>): 75 lb/ac  
Potassium (potash-K<sub>2</sub>O): 85 lb/ac  
Soluble Salts: not to exceed 500ppm

It is required that a sieve analysis, PH, phosphorus, potassium, soluble salts and Organic matter test must be performed per each bioretention area. A textual analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

Since labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

**Soil Replacement:** Placement of planting soil for bioretention area should be in lifts of 12 to 18 inches.

**Mulch Specifications:** Individual planting shall be mulched (refer to landscaping details, DWG Bio-2). Acceptable mulch shall be shredded hardwood only. Mulch must be well aged, uniform in color, and free of foreign material including plant material. Well aged mulch is defined as mulch that has been stockpiled or stored for at least twelve (12) months.

**Gravel Filter Specifications:** Coarse aggregate, MDSHA No. 7 stone per MDOT-SHA standards and specifications, 95% must pass through 1" sieve, double washed. Recycled asphalt pavement may be used as a component not to exceed 15% percent.

**Sand Specifications:** Provide clean sand, free of deleterious materials. Sand shall meet AASHTO M-6 or ASTM C-33 with grain size of 0.02"-0.04".

**Geotextile Specifications:** Geotextile fabric shall meet ASTM D-7512 puncture strength 125 LB  
ASTM D-7512 tear strength 125 LB  
ASTM D-1117 (Mullen burst strength 400 PSI)  
ASTM D-1682 (Tensile Strength - 300 LB)

Fabric shall have 0.08" thick E.O.S. of #80 sieve, and maintain 125 GPM per SQ. FT.

Inspection requirements:

1. The contractor shall arrange a "preconstruction meeting" with the contracting officer prior to beginning work on the bioretention facility.
2. At the completion of excavation to inspect the subgrade.
3. During underdrain and filter installation.
4. Back fill of soil into the bioretention areas. Soil certifications for back fill are required.
5. The final topsoil layers should be thoroughly wetted achieve settlement of the soil/sand backfill mix.
6. Additional soil backfill should be placed as required to achieve the design top surface elevations.
7. The work shall be inspected by the contracting officer prior to final stabilization and planting.
8. Sediment control and erosion practices may be removed upon approval by the WMA inspector.

**Fertilizer:** Commercial slow release fertilizer for additional plant application shall be standard formula 10-6-4, nitrogen 10%, phosphoric acid 6%, potash 4% and contain minor trace elements. The formula shall be in conformity to applicable state fertilizer laws. Fertilizer shall be uniform in composition, dry and free flowing, and shall be delivered to the project site in the original unopened containers, each bearing the manufacturers guaranteed analysis. Any fertilizer which becomes wet, caked, or otherwise damaged will not be accepted. Tree, shrub, and potted herbaceous plants or grasses use Osmocote 19-6-12, 12-14 month release at a rate of 1oz. per herbaceous plant or grass; 4oz. per shrub. Trees use Agriform 20-10-5, two year release, 10 gram tablets.

**Water:** Shall be furnished by the contractor for the execution of all work specified in this contract. The contractor shall verify that the water available is suitable for irrigation and free from ingredients harmful to plant life.

Brace Stakes

**BRACE STAKES:** Wood brace stakes shall be common lumber or the sizes in the following table:

Tree Size  
1"-1.5" Cal.or < 8' tall 2"x2"x96"  
1.5"-3" Cal.or > 8' tall 2"x2"x24" 2"x2"x30" for conifers

Wire shall be good commercial quality of galvanized wire. Wire used to stake trees shall be No. 11 gauge minimum.

**HOSE COLLARS:** Hose collars shall be new two ply fabric bearing garden hose not less than 0.5 inch inside diameter.

PLANT MATERIAL STANDARDS:

**NAMES AND GRADES:** Plant material shall conform to nomenclature of "Standardized Plant Names" as adopted by the Joint Committee of Horticulture Nomenclature, latest edition. Size and grading standards shall conform to the American Association of Nurserymen, Inc., as published in the "American Standard for Nursery Stocks", latest edition. No substitutions of size or grade shall be permitted. Plants shall be inspected from the contracting officer. Each bundle of plants and all separate plants shall be properly identified with the legible waterproof tags securely fastened to each plant or bundle of plants. They shall remain on the plants until final inspection.

**HEALTH:** All plants including their roots shall be free from disease, insects, or other injurious qualities. All local, state, and federal laws pertaining to the inspection, sale, and shipment of plant materials shall be complied with. The trunk bark of trees shall be sound, trees shall have no large wounds, and any small wounds shall have a satisfactory quality roll formed over them. Plants shall show no signs of insect damage. Plants shall be plump and well filled for the species. Evergreen foliage shall be of good intense quality.

**QUALITY:** All plants shall be true to type; they shall have normal, well-developed branch systems, and a vigorous fibrous root system; they shall be sound, healthy, vigorous plants free from defects, disfiguring knots, sun scald injuries, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All new plants shall be nursery grown.

**BALL AND BURLAP:** All balled and burlapped plants shall conform to the "American Standard for Nursery Stock", latest edition. All balls shall be of natural earth in which the plant has been growing. No manufactured or artificially produced or mudded-balls shall be accepted. Balls shall be firm and unbroken, and of large enough size to adequately enclose the plant's fibrous root system.

**PLANT LIST:** The list of plants furnished with the specifications is for the information of the Contractor. The height and caliper of trees, the height or spread of shrubs, the diameter of the balls or roots are the minimum dimensions required. Plants indicated "E" are to be dug with a ball of earth and wrapped in burlap.

MEASUREMENTS:

- Shall conform to those specified on the plant list except as follows:
- Oversize plants may be used only after approval by the contracting officer.
- Use of such plants shall not increase the contract price.

Height and spread dimensions indicated refer to the main body of the plant and not from branch tip to branch tip. All trees and shrubs shall be measured when their branches are in normal position. Trees shall have straight trunks with the leader intact, undamaged and uncut.

**INSPECTION:** The Planting Contractor shall be responsible for all inspection and approval of the plant material that may be required by state, federal and other authorities, and he shall secure any permits and certificates that may be required.

All plants shall be subject to inspection, and approval at place of growth before digging, or upon delivery, for quality, size and variety; such approval shall not impair the right to rejection at the project site during progress of the work, for size, condition of balls, roots, latent defects or injuries. Rejected plants shall be removed immediately from the project.

DIGGING AND HANDLING:

Protection from extremes in exposure and rough handling shall be provided all plant materials during transport and storage.

All plant materials shall be assembled in one location on the job site to permit inspection and approval of the contractor. The contractor shall notify the contracting officer five (5) working days prior to planting so that a mutually agreeable time may be arranged for inspection. Stock with broken root balls or loose containers, and stock which shows evidence of being root-bound, over-grown, or recently canned, or in the opinion of the contracting officer is damaged or improperly cared for, shall be removed from the site immediately and replaced at the contractors expense with one plant meeting the original specifications. Plants shall not be pruned prior to approval by the contracting officer.

PROCEDURE:

BIORETENTION PLANTING BED

A. SITE PREPARATION

1. Construct sediment control sequence of construction and features as shown on sediment control plan. Contractor is to conform to sediment control plan and notes, until site is stabilized and has been approved by MDE Inspector. Notify MDE Inspector, Owner and contracting officer prior to commencement of planting work.
2. Excavate site to grades shown on plan. Care should be taken to preclude sediments, or sediment-laden runoff from entering planting area.
3. Remove and dispose of excess soil in approved on-site spoil area. Contractor is to obtain approval of the contracting officer for the bioretention construction plans and grading, the Contractor shall install Soil Filter/Planting Media for the designed planting area as shown on the plans. Construction of rubble, rocks, trash and sediments coarser than sand are excluded by this specification.
4. If boulders or a rock outcropping are encountered during excavation or substrate preparation, the Contractor shall notify the contracting officer for possible incorporation on site.
5. After excavation and use of heavy equipment, the graded planting area shall be tilled/plowed to a depth of one foot for a loose, friable planting soil condition.

B. PLANTING

1. During planting operations and excavations for planting pits, exercise care to maintain level grading across site, as shown on grading plan. Avoid depressions or mounding as a result of planting.
2. Planting will be done between March 15 through June 30 and September 15 through November 15. Exception: Oaks to be planted in Spring.
3. Exact location of plants shall be determined in the field by the planting Contractor based on hydraulic tolerances. Any major changes to the planting scheme are to be approved by the contracting officer.
4. Fertilizer shall be placed in each planting pit and consist of Osmocote 19-6-12, 12-14 month release, at a rate of 1 oz. per herbaceous plant; 4 oz. per shrub. Trees use Agriform 20-10-5, two-year release, 10 gram tablets at the manufacturer's recommended rate of 1oz. per acre. Use standard 10-10-10 fertilizer at a rate of 80 lb./acre. Also see Note 10.
5. All container grown plants are to be planted with crown or top of soil ball approximately 1" above grade of planting substrate.
6. Backfill in planting pits is to be of some material as planting substrate and is to be firmed around not excessively compacted.
7. Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted. Substitutions of balled and burlapped for container grown stock must be approved by contracting officer.
8. Wetland plants must be wet cultured for a minimum of 3 months and supplied by the contractor. Reseeded areas shall be planted with crown or top of soil ball process. Upland plants can be supplied from standard upland grown nursery operation. See list for wetland planting sources.
9. Seed mix seeds shall be broadcast or addressed in upper areas. Mulch shall consist of 2" of topsoil, 2" of compost, 2" of asphalt. Asphalt application will not be acceptable. The seed mix shall be a blend of 90% Rebel II Tall Fescue and 10% Red Top.
10. Lowland (flood prone) seed mixes shall be cultivated to a depth of 10 to 14-inch, followed by dragging, then poking or rolling. In graded areas, fertilizing of these areas shall be deferred until seedlings are 2 inches tall.

TREE PLANTING WITHIN THE BIORETENTION PLANTING MEDIA

**PLANTING PITS:** Shall be a diameter one (1) foot greater than the diameter of the ball of the tree. The depth of the pit shall be enough to accommodate the ball or roots of the tree when the tree is set to finish grade, allowing for six inches of compacted planting media soil below the roots of the plant.

**LAYOUT:** All trees shall be located as designated in the field by the planting plan. Where below ground or overhead obstructions are encountered, the trees shall be relocated by the contracting officer.

**SETTING OF TREES:** Before setting the trees, pits shall thoroughly tamped and watered. All plants shall be placed at such a level that, after settlement, the natural relationship between the original grade at which the plant grew, the ball shall be higher than the final grade. The planting shall be oriented for desired effect or as directed by the contracting officer. Planting soil shall be tamped under and around the base of each ball to fill all voids and shall be placed in 6 inch layers, each thoroughly tamped and puddled. Burlap shall be removed from the sides and top of balls and top of balls and from under the balls. When planting bare root trees, care shall be taken to work topsoil in around the roots and to spread them in a natural position before backfilling. Shallow basin or saucers a little larger than the diameter of the ball shall be formed around all trees to hold additional water.

TREE PLANTING OUTSIDE OF PLANTING MEDIA ADJACENT TO THE BASIN

**PLANTING PITS:** Shall be a diameter one (2) feet greater than the diameter of the ball of the tree. The depth of the pit shall be enough to accommodate the ball or roots of the tree when the tree is set to finish grade, allowing for six inches of compacted topsoil below the roots of the plant. Prior to installing the tree into the pit, 3" of existing soil shall be broken up and mixed with the topsoil at a 1:1 ratio to reduce puddling beneath plantings.

**PLANTING SOIL PREPARATION:** Mix 5 lbs. of 10-6-4 slow release fertilizer per cubic yard of topsoil and then one part peat moss with five parts topsoil. Mix all components thoroughly before backfilling.

**SETTING OF TREES:** Before setting the trees, pits shall be backfilled with topsoil to a depth of 6", thoroughly tamped and watered. All plants shall be placed at such a level that, after settlement, the natural relationship between the original grade at which the plant grew, the ball shall be 1/8" higher than the finish grade. Trees shall be planted plumb, oriented for desired effect as directed by the contracting officer. Topsoil shall be tamped under and around the base of each ball to fill all voids and shall be placed in 6 inch layers, each thoroughly tamped and puddled. Burlap shall be removed from the sides and top of balls and from under the balls. When planting bare root trees, care shall be taken to work topsoil in around the roots and to spread them in a natural position before backfilling. Shallow basin or saucers a little larger than the diameter of the ball shall be formed around all trees to hold additional water.

ALL PLANTING AREAS

**MULCH:** Shall be applied to all tree pits to a depth of 2-3".

**PRUNING:** All trees shall be neatly pruned after planting in accordance with the best standard practices and as directed by the contracting officer. The tree shall be pruned to preserve its natural form and character, and in a manner appropriate to its particular requirements. In general, at least one third of the deciduous trees shall be removed by thinning shortening of branches but no leaders shall be cut. All pruning shall be done with clean, sharp tools.

SHRUB AND HERBACEOUS MATERIALS (GROUND COVER) PLANTING

WITHIN THE BIORETENTION PLANTING MEDIA ADJACENT TO THE BASIN:

**LAYOUT:** Herbaceous planting beds and shrub pit locations shall be in accordance with the plant list and the tentative locations shown on the planting plan.

**PREPARATION OF HERBACEOUS PLANTING BEDS:** All holes, depressions and rivulets shall be filled and brought to a smooth grade.

**SHRUB PLANTING PITS:** Shall have vertical sides. The diameter of the pits shall be six (6) inches greater than the diameter of the ball of the shrub. The depth of the pit shall be enough to accommodate the ball or roots of the shrub when the shrub is set to finish grade.

**SHRUB BACKFILL SOIL:** Mix 5 lbs. 10-6-4 slow release fertilizer per cubic yard of topsoil and then one part peat moss with five parts topsoil. Mix all components thoroughly before backfilling.

**SETTING OF SHRUBS:** All materials shall be planted 2" higher in relation to the finish grade as they had before transplanting. The depth of the holes, as hereafter specified, shall be understood to be the depth below finish grade. Balled and burlapped plants shall have topsoil tamped under the balls. All burlap, ropes, staves, etc., shall be taken off the tops of the balls and removed from the ball before planting. Roots of bare root plants shall not be left matted together, but shall be arranged in natural positions and shall have topsoil worked in among them. All broken and froayed roots shall be properly removed by trimming.

**THE BACKFILL OF PLANTING MEDIA SOIL:** Shall be tamped in successive 4" layers. When the hole has been 2/3 backfilled, water shall be poured in filling the hole, and allowed to soak away so that all voids or air pockets under or around the roots are eliminated. After the hole shall be completely backfilled with topsoil, the planting media soil. After the backfill settles, additional soil shall be filled in, to the level of the finish grade.

SHRUB AND HERBACEOUS MATERIALS (GROUND COVER) OUTSIDE OF THE BIORETENTION PLANTING MEDIA:

**LAYOUT:** Herbaceous planting beds and shrub pit locations shall be designated by the contracting officer in accordance with the plant list and the tentative locations shown on the planting plan. The general form of the planting bed shall be staked out and excavations performed within the stakes.

**PREPARATION OF HERBACEOUS PLANTING BEDS:** The ground shall be thoroughly broken to a depth of 12 inches (excluding topsoil). The hole shall be worked by the contractor until the soil is completely fined and in a mellow condition to finish grade. All organic material shall either be worked into the soil or removed from the site. Clumps shall be removed from the site. A work shall be performed perpendicular to the direction of surface drainage. All holes, depressions and rivulets shall be filled and brought to a smooth grade.

**SHRUB PLANTING PITS:** Shall have vertical sides. The diameter of the pits shall be one (1) foot greater than the diameter of the ball of the shrub. The depth of the pit shall be enough to accommodate the ball or roots of the shrub when the shrub is set to finish grade compacted allowing for six inches topsoil below the roots of the plant prior to installing the 6" of topsoil to the pit, 3" of existing soil shall be mixed with the topsoil at a 1:1 ratio to reduce puddling beneath plantings.

SHRUB PLANTING SOIL: Mix 5 lbs. 10-6-4 slow release fertilizer per cubic yard of topsoil and then one part peat moss with five parts topsoil. Mix all components thoroughly before backfilling.

**SETTING OF SHRUBS:** All materials shall be planted 2" higher in relation to the finish grade as they had before transplanting. The depth of the holes, as hereafter specified, shall be understood to be the depth below finish grade. Balled and burlapped plants shall have topsoil tamped under the balls. All burlap, ropes, staves, etc., shall be taken off the tops of the balls and removed from the ball before planting. Roots of bare root plants shall not be left matted together, but shall be arranged in natural positions and shall have topsoil worked in among them. All broken and froayed roots shall be properly removed by

**THE BACKFILL OF TOPSOIL:** Shall be tamped in successive 8" layers. When the hole has been 2/3 backfilled, water shall be poured in filling the hole, and allowed to soak away so that all voids or air pockets under or around the roots are eliminated. After the hole shall be completely backfilled with topsoil, the backfill settles, additional soil shall be filled in, to the level of the finish grade. Shallow saucer of soil shall be formed around the edge of each hole to hold additional water.

ALL PLANTING AREAS

**PRUNING:** All shrubs shall be neatly pruned or thinned immediately after planting in accordance with best standard practices and as directed by the contracting officer. Broken or bruised branches shall be removed with a clean cut. Each shrub shall be pruned to preserve its natural form or character and in a manner appropriate to its particular requirements. In general, at least one third of the deciduous trees shall be removed by thinning shortening of branches but no leaders shall be cut. All pruning shall be done with clean tools.

**MULCH:** Shall be applied to all shrub beds and pits to a depth of 3" and to all herbaceous planting beds to a depth of 2".

**SOD:** Shall be in conformance with Maryland Department of Transportation, State Highway Administration, Standards and Specifications for Materials and Construction - Sections 708 & 920. Sod shall be well established cultured sod consisting of desirable rooted tall fescue or other approved permanent and desirable grasses. The sod shall be free of noxious weeds, undesirable grasses and foreign matter.

**LAWN AND STABILIZATION GRASS SEEDING:** Shall be in conformance with Maryland Department of Transportation, State Highway Administration, Standards and Specifications for Materials and Construction - Sections 705 & 920. Seed shall conform with SHA Mixture No. 1 and be applied to all areas where sod is not used and at a rate appropriate to develop a full, well established cover. Seed mixture shall be a mixture of turf type tall fescue and other approved permanent and desirable grasses as specified. Reseed areas within 21 days that are bare or sparse in cover.

**BIORETENTION AREA CONSERVATION SEEDING:** Shall conform with seeding schedules and rates as indicated on planting schedule as shown on the plans. Seed shall be applied to all areas indicated on the plan and at a rate appropriate to develop a full, well established cover. Seed mixture shall be a mixture of native grasses of plant diversity and wildlife benefit or other approved permanent and desirable grasses as specified. Reseed areas within 21 days that are bare or sparse in cover.

**STAKING:** Staking shall be completed by the end of the day for all materials planted during the daytimes 1" to 4.5" in diameter shall be staked with three stakes placed evenly around the sides of the tree, outside of the ball. All stakes shall be oriented to a line parallel with the normal prevailing winds, or as directed by the contracting officer. See planting details for staking locations.

**TEMPORARY STORAGE AND HEELING-IN:** No heel-in plant material will be accepted, nor will temporary heeling-in be permitted. Plant material unloaded and accepted by the inspector shall be immediately transported to the planting site and the material shall be stored in a manner appropriate to its particular requirements or otherwise unprotected during transit, unloading or storage shall be rejected by the Architect. If in the judgment of the contracting officer such storage caused damage to the roots of the plant or in any other way injured the plant material.

**MAINTENANCE:** The planting contractor shall be required to make periodic checks on the total project to make certain that the materials are properly cared for and that the sum of all conditions are contributing to the acceptance of the materials, until such time as the work is approved by the contracting officer.

The Contractor shall conduct monthly inspections of the site during the 24 month warranty period after planting on a quarterly basis. During these quarterly inspections, the Contractor shall:

1. Remove all litter and debris throughout the site.
2. Replace failed materials and/or reseed all erosion control stabilizing grasses, bushes and/or ground covers with a permanent erosion.
3. Conduct fertilizations as may be required or requested.
4. Take appropriate measures to exclude wildlife, if destructive depredation occurs.
5. Conduct soil tests for pH, substrate salinity and moisture content, and notify the contracting officer of the condition of the soil. Acceptance of the work will be determined under conditions that are unsatisfactory, to insure plant success. Note: salinity may fluctuate especially in early Spring, due to uphill runoff from driveway or road treated with de-icing salts.
6. Maintain planted and seeded areas by watering, mowing, rolling, or replanting and implementing erosion controls as required to establish vegetation, free of bare or eroded areas.
7. Contractor shall furnish and install temporary irrigation hose & sprinkler system for warranty period. The base shall provide water.
8. Contractor shall adjust minor (<6") of soil settlement areas back to grade with mulch, if greater than 6" settlement add sha and mulch in accordance with details to reestablish proper grades.

CLEANUP AND PROTECTION:

1. During landscape work, store materials and equipment where directed. Keep pavements clean and work areas and adjoining areas in an orderly condition.
2. Protect landscape work and materials from damage due to landscape operations, operations by other trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed by contracting officer.

**INSPECTION AND ACCEPTANCE:** Inspection of this work will be made by the contracting officer at the conclusion of the planting period upon written notice by the Contractor at least five (5) days prior to anticipated date. Condition of all plant materials will be noted and recorded for reference. The contractor shall be notified and notified in writing by the contracting officer if there are any deficiencies of the requirements for acceptance of the work.

1. The contracting officer reserves the right to inspect seeds and plant materials, either at the place of growth or at site before planting, for compliance with requirements for name, variety, size, quantity, quality and mix proportion.
2. Supply written affidavit certifying composition of seed mixtures and integrity of plant materials with respect to species, variety and source.
3. Notify the contracting officer within 5 days after completing initial and/or supplemental plantings in wetland area.
4. When the landscape work is completed, including maintenance, the contracting officer will, upon request, make a final inspection to determine acceptability. After final acceptance, the contracting officer will be responsible for maintenance and watering of plants.
5. The Contractor shall be responsible for the satisfactory growth of trees, shrubs and grasses, forbs and sedge species in all areas seeded and/or planted under the contract, until final acceptance of the work. Acceptance of the work will be determined using a time-meander search. The contracting officer shall conduct a time-meander search at the end of the warranty period (not to exceed 24 months). The search will randomly sample 20% of the area for each area that was seeded and/or planted. If 80% of the species seeded and/or planted are alive and apparent, and the sample area has 85% ground cover of acceptable species, the work will be accepted.
6. Where inspected landscape work does not comply with the requirements, the contractor shall replace rejected work and continue specified maintenance until reinspected by the contracting officer and found to be acceptable. Remove rejected plants and materials promptly from the project site. Re-sow or replant deficient areas.

**GUARANTEE AND REPLACEMENT:** The Contractor will guarantee an 85% survival rate of plants (each species) after two years. If, at this time the total number of plants has fallen below the specified number, the Contractor will make a one time replacement to bring plant numbers to the 85% levels for each species. Care shall be taken such that the activities involved in replacement cause no damage or detrimental effect to the surviving flora. Any plants damaged by these activities will also be replaced by the Contractor to the 85% threshold.

Trees, shrubs and ground covers shall be guaranteed for a maximum 2 years after installation and shall be alive and in satisfactory condition at the end of the guarantee period. Such guarantee excludes vandalism.

**DEFINITION FOR FURNISHED AND INSTALLING PLANT MATERIAL:** The unit price contained in the bid proposal for furnishing and installing plant material and shrub material shall be defined to include furnishing and installing material, all planting soils (if applicable), staking and a guarantee for 24 months (excluding vandalism).

**PROTECTION OF PRIVATE PROPERTY:** Contractor shall repair or replace all fences, concrete walls, concrete curbs, gravel and asphalt driveways, sidewalks and other miscellaneous improvements, at no additional expense to contracting officer, damaged by Contractor or its equipment or vehicles, or by a condition equal to or better than their condition before construction.

INSPECTION

1.1 INSPECTION SCHEDULE AND REPORTS

- A. THE APPLICANT SHALL NOTIFY THE ADMINISTRATION (THE COMPLIANCE PROGRAM) AT LEAST 7 DAYS BEFORE COMMENCING ANY WORK IN CONJUNCTION WITH THE EROSION/SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLANS AND AGAIN UPON COMPLETION OF THE PROJECT.
- B. FOR EACH ESD PRACTICE AND OTHER BMPs, REGULAR INSPECTIONS SHOULD BE PERFORMED AT THE STAGES OF CONSTRUCTION SPECIFIED IN THE DESIGN MANUAL AND DOCUMENTED BY THE APPLICANT OR AUTHORIZED REPRESENTATIVE. AT A MINIMUM, ALL ESD PRACTICES AND OTHER BMPs MUST BE INSPECTED UPON COMPLETION OF FINAL GRADING AND UPON THE ESTABLISHMENT OF PERMANENT STABILIZATION.
- C. THE APPLICANT SHALL SUBMIT NOTICE OF CONSTRUCTION COMPLETION TO THE ADMINISTRATION ON THE FORM PROVIDED IN THE APPENDIX FOR EACH STRUCTURAL STORMWATER MANAGEMENT PRACTICE AS WELL AS THE TYPE, NUMBER, TOTAL DRAINAGE AREA, AND TOTAL IMPERVIOUS AREA TREATED BY ALL ESD TECHNIQUES AND PRACTICES.

1.2 INSPECTION REQUIREMENTS DURING CONSTRUCTION FOR AS-BUILT CERTIFICATION

A. REGULAR INSPECTIONS SHOULD BE MADE AND DOCUMENTED DURING AND AFTER COMPLETION OF CONSTRUCTION FOR THE FOLLOWING PRACTICES:

1. ESD PRACTICES OR ALTERNATIVE SURFACES:
  - a. PERMEABLE PAVERS;
  - b. GREEN ROOFS;
  - c. MICRO-BIORETENTION; RAIN GARDENS; ENHANCED FILTERS;
2. INFILTRATION TRENCHES:
  - a. DURING EXCAVATION TO SUBGRADE;
  - b. DURING PLACEMENT OF OBSERVATION WELLS;
  - c. DURING PLACEMENT OF GEOTEXTILES AND TRENCH STONE;
  - d. DURING CONSTRUCTION OF APPURTENANT CONVEYANCE SYSTEMS SUCH AS DIVERSION STRUCTURES, FOREBAYS, INLETS, OUTLETS, AND FLOW DISTRIBUTION STRUCTURES; AND
3. SAND FILTERS AND BIORETENTION:
  - a. DURING EXCAVATION TO SUBGRADE;
  - b. DURING PLACEMENT OF UNDERDRAIN SYSTEMS AND OBSERVATION WELLS;
  - c. DURING PLACEMENT OF GEOTEXTILE AND ALL FILTER MEDIA;
  - d. DURING CONSTRUCTION OF APPURTENANT CONVEYANCE SYSTEMS SUCH AS FLOW DIVERSION STRUCTURES, PRE-TREATMENT, INLETS, OUTLETS, ORIFICES, AND FLOW DISTRIBUTION STRUCTURES; AND
4. OPEN CHANNEL SYSTEMS:
  - a. DURING EXCAVATION TO SUBGRADE;
  - b. DURING PLACEMENT OF UNDER DRAIN SYSTEM, OBSERVATION WELLS, AND FILTER MEDIA; FOR DRY SWALE AND;
  - c. DURING INSTALLATION OF CHECK DAMS, OR WEIRS.
5. ONCE CONSTRUCTION IS COMPLETE, AS-BUILT PLAN CERTIFICATION MUST BE SUBMITTED TO THE ADMINISTRATION BY EITHER A PROFESSIONAL ENGINEER OR A PROFESSIONAL LAND SURVEYOR TO ENSURE THAT CONSTRUCTION OF STORMWATER MANAGEMENT PRACTICES AND CONVEYANCE SYSTEMS COMPLY WITH THE APPROVED PLANS. AT A MINIMUM, THE "AS-BUILT" SUBMITTAL MUST INCLUDE A SIGNED AS- BUILT CERTIFICATION, COMPLETED AS-BUILT DATA TABLE(S), AND A SET OF "AS-BUILT" DRAWINGS WHICH CORRELATE THE APPROVED STORMWATER MANAGEMENT PLAN WITH WHAT WAS CONSTRUCTED. THE ADMINISTRATION MAY REQUIRE ADDITIONAL INFORMATION FOR A PROJECT TO BE CLOSED OUT BY THE ADMINISTRATION. AS-BUILT CERTIFICATION MUST BE RECEIVED. AN AS-BUILT CERTIFICATION FORM CAN BE FOUND IN THE APPENDIX OF THESE GUIDELINES.

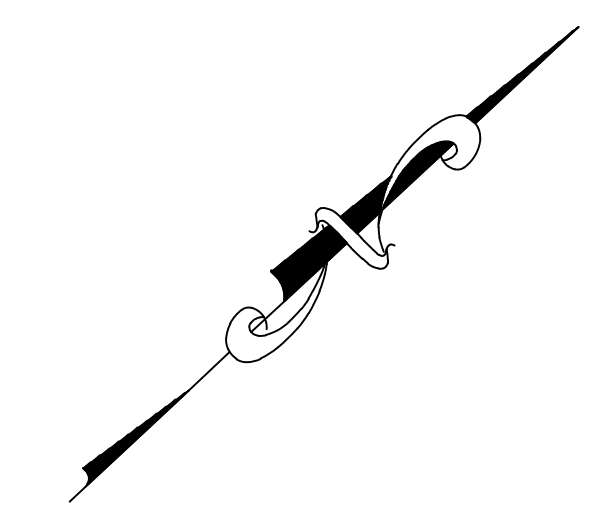
MAINTENANCE

- A. THE OWNER OF THE PROPERTY, OR ANY OTHER PERSON OR AGENT IN CONTROL OF SUCH PROPERTY, ON WHICH WORK HAS BEEN DONE PURSUANT TO THESE GUIDELINES, MUST MAINTAIN IN GOOD CONDITION AND PROMPTLY REPAIR AND RESTORE ALL GRADE SURFACES, WALLS, DRAINS, DAMS AND STRUCTURES, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES, AND OTHER PROTECTIVE DEVICES. SUCH REPAIRS OR RESTORATION AND MAINTENANCE MUST BE IN ACCORDANCE WITH THE APPROVED PLANS.
- B. A MAINTENANCE SCHEDULE MUST BE DEVELOPED FOR THE ALL STORMWATER MANAGEMENT AND/OR ESD PRACTICES AND MUST STATE THE MAINTENANCE TO BE COMPLETED, THE TIME PERIOD FOR COMPLETION, AND WHO MUST PERFORM THE MAINTENANCE. THIS MAINTENANCE SCHEDULE MUST BE PRINTED ON THE APPROVED STORMWATER MANAGEMENT PLAN.

| PROJECT NAME: VA PERRY POINT BUILDING 360 EXPANSION           |             |           | MDE NO: 15-SF-0219 |           |            |           |
|---|-------------|-----------|--------------------|-----------|------------|-----------|
| AS-BUILT DATA FOR ESD PRACTICES                               |             |           |                    |           |            |           |
| * TO BE COMPLETED BY THE CERTIFYING ENGINEER                  |             |           |                    |           |            |           |
| TYPE OF ESD PRACTICE - MICROBIORETENTION                      | BMP ID: A   |           | BMP ID: B          |           | BMP ID: C  |           |
| FEATURE   | DESIGN      | *AS-BUILT | DESIGN             | *AS-BUILT | DESIGN     | *AS-BUILT |
| FILTER BED AREA   | 780 SF      |           | 1215 SF            |           | 371 SF     |           |
| FILTER BED SURFACE ELEVATION                                  | 31.8        |           | 31.8               |           | 32.8       |           |
| FILTER INLET PIPE SIZE / INVERT ELEVATION                     | 12", 31.8   |           | 12", 31.8          |           | 12", 26.6  |           |
| OUTLET PIPE (UNDERDRAIN) SIZE / INVERT ELEV.                  | 6", 26.55   |           | 6", 26.55          |           | 6", 27.55  |           |
| THICKNESS OF FILTER MEDIA                                     | 4"          |           | 4"                 |           | 4"         |           |
| PLACEMENT OF GEOTEXTILE                                       | N/A         |           | N/A                |           | N/A        |           |
| PLANTINGS   | PER PLAN    |           | PER PLAN           |           | PER PLAN   |           |
| COMPOSITION OF FILTER MEDIA                                   | BSM MIX     |           | BSM MIX            |           | BSM MIX    |           |
| OBSERVATION WELL WITH DEPTH TO FILTER BOTTOM INDICATED ON CAP | REQUIRED    |           | REQUIRED           |           | REQUIRED   |           |
| RISER STRUCTURE (OVERFLOW ELEVATION, INVERT OUT)              | 32.8, 26.45 |           | 32.8, 26.45        |           | 33.8, 26.6 |           |
| OVERFLOW WEIR (LENGTH, ELEVATION)                             | 8', 32.8    |           | 8', 32.8           |           | 8', 33.8   |           |



THREE INCHES=ONE FOOT (3"=1'-0")  
ONE AND ONE HALF INCHES=ONE FOOT (1 1/2"=1'-0")  
ONE INCH=ONE FOOT (1"=1'-0")  
THREE QUARTERS INCH=ONE FOOT (3/4"=1'-0")  
ONE HALF INCH=ONE FOOT (1/2"=1'-0")  
ONE QUARTER INCH=ONE FOOT (1/4"=1'-0")  
ONE EIGHTH INCH=ONE FOOT (1/8"=1'-0")

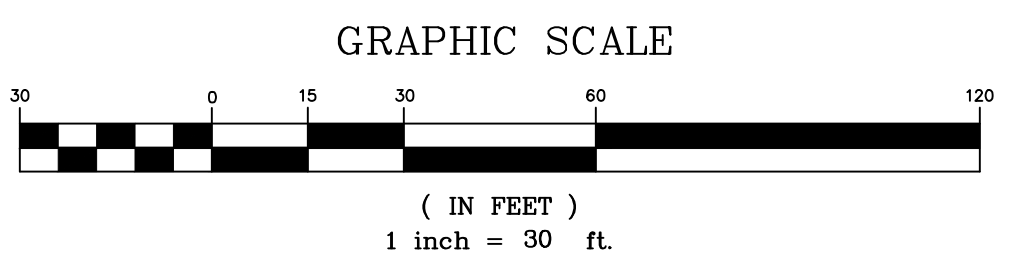


LEGEND

- EXISTING CONTOUR
- EXISTING ROAD
- EXISTING BUILDING
- EXISTING SANITARY SEWER LINE
- EXISTING WATER LINE
- EXISTING UNDERGROUND ELECTRIC LINE
- LIMITS OF DISTURBANCE
- EXISTING STORM DRAIN LINE
- EXISTING GAS LINE
- EXISTING UNDERGROUND COMM. LINE
- EXISTING TREE
- EXISTING MANHOLE
- PROPOSED CURB
- PROPOSED STORM DRAIN LINE
- PROPOSED MANHOLE
- AGIP
- ABOVE GRADE INLET PROTECTION
- SILT FENCE
- SUPER SILT FENCE
- CONCRETE WASHOUT STRUCTURE
- STABILIZED CONSTRUCTION ENTRANCE

SEQUENCE OF CONSTRUCTION

- CONTACT THE MDE COMPLIANCE INSPECTOR (410-537-3510) TO REQUEST A PRE-CONSTRUCTION MEETING AT LEAST SEVEN (7) DAYS PRIOR BEGINNING ANY EARTH MOVING ACTIVITIES.
- THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED USING STAKES AND FLAGGING PRIOR TO THE CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
- HOLD PRE-CONSTRUCTION MEETING WITH MDE INSPECTOR.
- CLEAR AND GRUB FOR INSTALLATION OF EROSION AND SEDIMENT CONTROL DEVICES AND INSTALL STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, SUPER SILT FENCE, AND INLET PROTECTION ON ALL EXISTING INLETS WITHIN THE LOD.
- CONTACT MDE COMPLIANCE INSPECTOR TO REQUEST AUTHORIZATION TO PROCEED WITH REMAINING EARTH DISTURBING ACTIVITIES AND BUILDING CONSTRUCTION. DOCUMENT AUTHORIZATION WITH EMAIL OR BY OTHER MEANS.
- ONCE AUTHORIZED, PERFORM SITE GRADING AND BUILDING CONSTRUCTION WITH THE EXCEPTION OF THE BIORETENTION FACILITIES. MICRO BIORETENTION FACILITIES CANNOT BE EXCAVATED LOWER THAN ELEVATION 32 FEET FOR A AND B AND 33 FEET FOR C PRIOR TO STABILIZATION OF CONTRIBUTING DRAINAGE AREAS (SEE STEP 12).
- AS GRADING ALLOWS, BEGIN THE CONSTRUCTION OF THE REMAINING STORM DRAIN LINE AND RISERS STARTING AT THE MOST DOWNSTREAM STRUCTURE AND WORK UPSTREAM, INSTALLING INLET PROTECTION AS STRUCTURES ARE INSTALLED. DO NOT EXCAVATE ANY MICRO-BIORETENTION AREAS FOR MEDIA INSTALLATION UNTIL ALL UPSTREAM DRAINAGE AREA HAS BEEN STABILIZED.
- INSTALL REMAINING UTILITIES.
- BEGIN REMOVAL OF ASPHALT PAVING.
- BEGIN INSTALLING SIDEWALK AND CURB AND GUTTER.
- INSTALL REMAINING ASPHALT PAVING.
- UPON FINAL STABILIZATION AND WITH MDE COMPLIANCE INSPECTOR APPROVAL, INSTALL BIORETENTION DEVICES.
- FINAL GRADE THE AREAS AROUND ALL REMAINING MICRO-BIORETENTION AREAS.
- STABILIZE ALL CONTRIBUTING AREAS TO EACH MICRO-BIORETENTION AREAS. GRASS AREAS SHALL BE STABILIZED WITH SEED AND MULCH.
- WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, INSTALL ALL MICRO-BIORETENTION LAYERS AND PLANTINGS.
- STABILIZE ALL REMAINING DISTURBED AREAS.
- UPON COMPLETION OF ALL BIORETENTION AREAS AND WITH PERMISSION OF THE MDE SEDIMENT CONTROL INSPECTOR, REMOVE EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZE AREAS AFFECTED BY SEDIMENT CONTROL DEVICE REMOVAL. PLACE IN SERVICE THE BIORETENTION FACILITIES.



PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE  
PREPARED OR APPROVED BY ME, AND THAT I AM A DULY  
LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND.  
LICENSE NUMBER: 31168  
EXPIRATION DATE: 11/12/2017

|   |  |              |  |
|---|--|--------------|--|
| <b>Additions:</b>                       |  | <b>Date:</b> |  |
|   |  |              |  |
|   |  |              |  |
|   |  |              |  |
| <b>Revisions:</b>                       |  | <b>Date:</b> |  |
| SCHEMATIC DESIGN (30% SUBMISSION)       |  |              |  |
| DESIGN DEVELOPMENT (60% SUBMISSION)     |  | 09/11/15     |  |
| CONSTRUCTION DOCUMENTS (90% SUBMISSION) |  | 11/23/15     |  |
| BID DOCUMENTS (100% SUBMISSION)         |  | 03/17/16     |  |
|   |  |              |  |
|   |  |              |  |

|   |  |   |  |
|---|--|---|--|
| <b>ARCHITECT / ENGINEERS / CONSULTANTS:</b>   |  |   |  |
| OKKS Studios, Inc.<br>2 Wisconsin Circle / Suite 820<br>Chevy Chase, MD 20815-7003<br>Tel: (301) 718-0080<br>Fax: (301) 718-9520<br>www.okksstudios.com |  | Woods Peacock Engineering Consultants<br>5250 Cherokee Avenue, Suite 420<br>Alexandria, VA 22312-2053<br>Tel: (703) 658-4400<br>Fax: (703) 658-4404 |  |
| Nobis Engineering, Inc.<br>20410 Century Boulevard, Suite 230<br>Germantown, MD 20874<br>Tel: (301) 528-2010  |  | The Protection Engineering Group<br>2809 Boston Street, Suite 7<br>Baltimore, MD 21224 USA<br>Tel: (410) 296-6300<br>Fax: (410) 296-6301            |  |
| Henry Adams Consulting<br>Engineers, LLC<br>600 Baltimore Avenue, 4th Floor<br>Baltimore, MD 21204<br>Tel: (410) 296-6300<br>Fax: (410) 296-6301        |  |   |  |

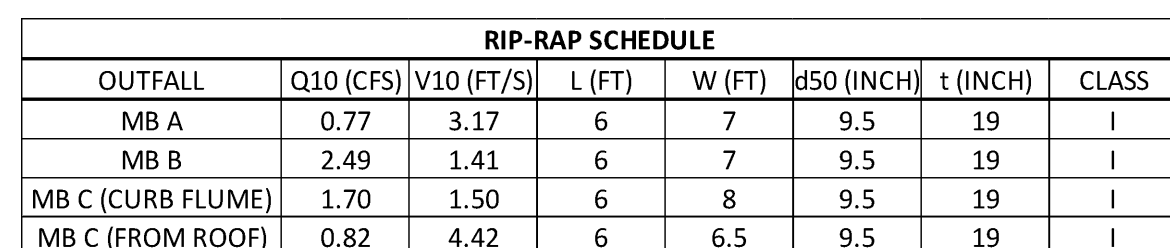
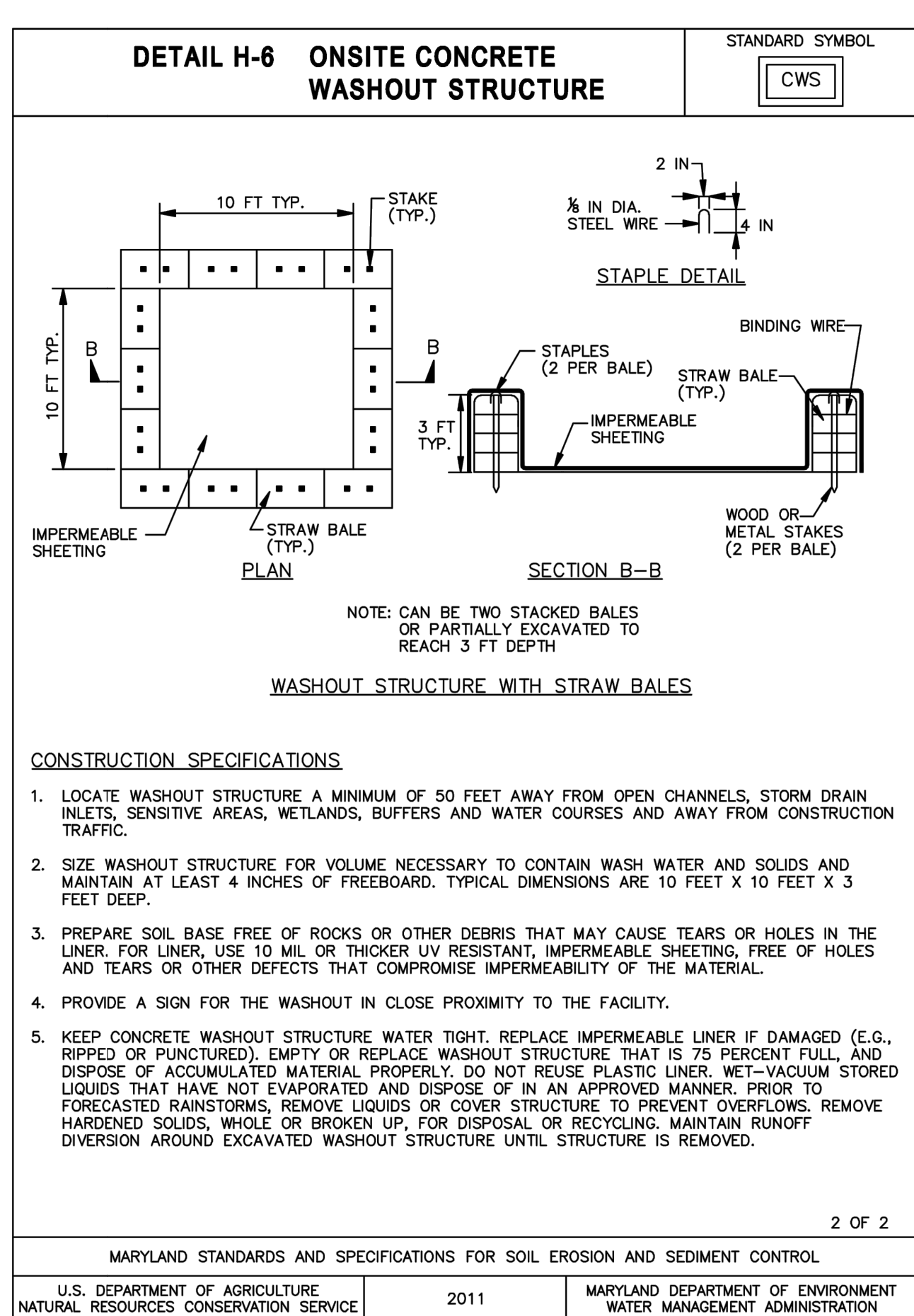
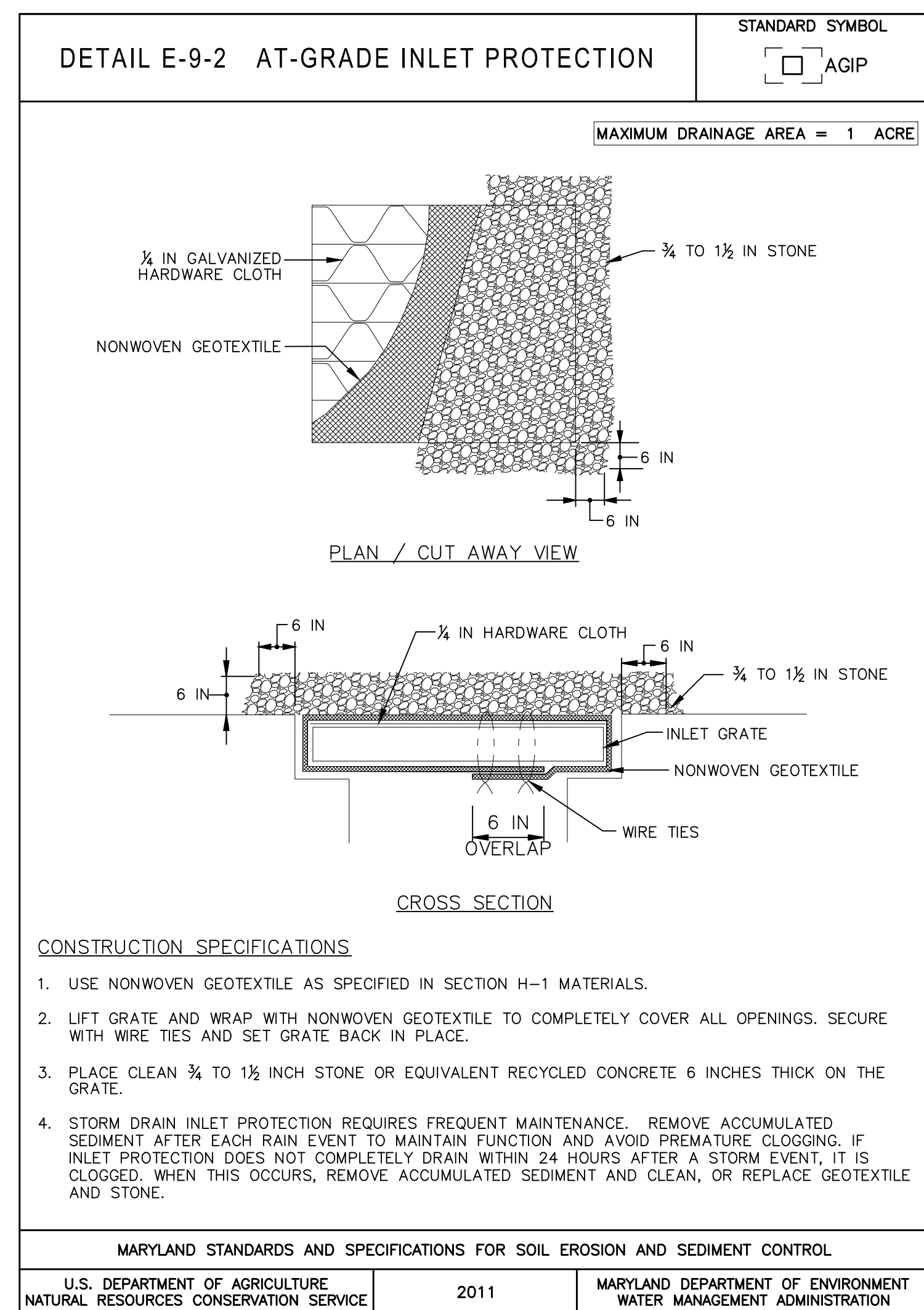
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|------------|-----------|---|--|
| Stamp/Seal | Approved: | Approved: Chief, Facilities and Engineering                           | Drawing Title                                |
|            |           | Approved: Associate Chief for Maintenance And Operations, Perry Point | <b>EROSION AND SEDIMENT<br/>CONTROL PLAN</b> |
|            |           | Approved: Engineering Projects Supervisor                             |  |
|            |           | Approved: Infection Control Officer                                   |  |
|            |           |   |  |
|            |           |   |  |

|                                    |  |                                     |  |
|------------------------------------|--|-------------------------------------|--|
| Approved: Director, Medical Center |  | Project Title                       |  |
|                                    |  | WAREHOUSE RENOVATION<br>& EXPANSION |  |
|                                    |  | Scale                               |  |
|                                    |  | Building Number                     |  |
|                                    |  | Checked                             |  |
|                                    |  | Drawn                               |  |
|                                    |  | Drawing Number                      |  |
|                                    |  | CU-400                              |  |
|                                    |  | OF XX                               |  |

|                 |  |                   |  |
|-----------------|--|-------------------|--|
| Location        |  | Date              |  |
| PERRY POINT, MD |  | 11/23/15          |  |
|                 |  | VA Project Number |  |
|                 |  | 512-530           |  |
|                 |  | Drawing Number    |  |
|                 |  | CU-400            |  |
|                 |  | OF XX             |  |







|  |                               |                      |                     |  |  |
|--|-------------------------------|----------------------|---------------------|--|--|
| <b>FULLY SPRINKLERED</b>   |                               |                      |                     | Date<br><b>11/23/15</b>  |  |
| Project Title<br><b>WAREHOUSE RENOVATION<br/>&amp; EXPANSION</b> |                               |                      |                     | VA Project Number<br><b>512-530</b>  |  |
| Scale  | Building Number<br><b>360</b> | Checked<br><b>JA</b> | Drawn<br><b>DWC</b> | Drawing Number<br><div style="font-size: 2em; font-weight: bold;">CU-410</div> <div style="text-align: right;">OF XX</div> |  |
| Location<br><b>PERRY POINT, MD</b>                               |                               |                      |                     |  |  |



THREE INCHES - ONE FOOT (1/2" = 1'-0")

ONE AND ONE HALF INCHES - ONE FOOT (1 1/2" = 1'-0")

ONE INCH - ONE FOOT (1" = 1'-0")

THREE QUARTERS INCH - ONE FOOT (3/4" = 1'-0")

ONE HALF INCH - ONE FOOT (1/2" = 1'-0")

THREE EIGHTHS INCH - ONE FOOT (3/8" = 1'-0")

ONE EIGHTH INCH - ONE FOOT (1/8" = 1'-0")

ONE EIGHTH INCH - ONE FOOT (1/8" = 1'-0")

STANDARD EROSION AND SEDIMENT CONTROL NOTES

THE WATER MANAGEMENT ADMINISTRATION REQUIRES THAT THESE NOTES, IN THEIR ENTIRETY, BE INCLUDED ON THE EROSION AND SEDIMENT CONTROL PLAN. IT IS RECOGNIZED THAT EVERY ATTEMPT WILL NOT APPLY TO ALL PROJECTS. THE REVISION OF ANY INDIVIDUAL NOTE NOT APPLICABLE TO THE SUBJECT PROJECT IS NOT BINDING UPON THE APPLICANT OR THE APPLICANT'S CONTRACTOR.

1. THE CONTRACTOR SHALL NOTIFY THE ADMINISTRATION (WMA) AT (410) 537-3510 SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, UNLESS WAIVED BY THE ADMINISTRATION, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF WMA.
2. THE CONTRACTOR MUST NOTIFY WMA IN WRITING AND BY TELEPHONE AT THE FOLLOWING POINTS:
  - A. THE REQUIRED PRE-CONSTRUCTION MEETING.
  - B. FOLLOWING INSTALLATION OF SEDIMENT CONTROL MEASURES.
  - C. DURING THE INSTALLATION OF SEDIMENT BASINS (TO BE CONVERTED INTO PERMANENT STORMWATER MANAGEMENT STRUCTURES) AT THE REQUIRED INSPECTION POINTS (SEE INSPECTION CHECKLIST ON PLAN), NOTIFICATION PRIOR TO COMMENCING CONSTRUCTION OF EACH STEP IS MANDATORY.
  - D. PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURE(S).
  - E. PRIOR TO REMOVAL OF SILT SEDIMENT CONTROL DEVICES.
  - F. PRIOR TO FINAL ACCEPTANCE.
3. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND CONSTRUCTION SEQUENCE AND SHALL HAVE THEM INSPECTED AND APPROVED BY THE AGENCY INSPECTOR OR WMA INSPECTOR PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES. MINOR SEDIMENT CONTROL DEVICE LOCATION ADJUSTMENTS MAY BE MADE WITH THE APPROVAL OF THE WMA INSPECTOR. THE CONTRACTOR SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR PERMISSION FROM WMA INSPECTOR AND AGENCY INSPECTOR. THE CONTRACTOR MUST OBTAIN PRIOR AGENCY AND WMA APPROVAL FOR CHANGES TO THE SEDIMENT CONTROL PLAN AND / OR SEQUENCE OF CONSTRUCTION.
4. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.
5. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIMES AS THEY ARE REMOVED WITH PRIOR PERMISSION FROM WMA INSPECTOR AND AGENCY INSPECTOR.
6. ALL SEDIMENT BASINS, TRAP EMBANKMENTS AND SLOPES, PERIMETER DIKES, SWALES AND ALL DISTURBED SLOPES STEEPER OR EQUAL TO 3:1 SHALL BE STABILIZED WITH SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES, AS SOON AS POSSIBLE BUT NO LATER THAN THREE (3) CALENDAR DAYS AFTER ESTABLISHMENT. ALL AREAS DISTURBED OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM MUST BE MINIMIZED. MAINTENANCE MUST BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.
7. THE CONTRACTOR SHALL APPLY SOD OR SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES TO ALL DISTURBED AREAS AND STOCKPILES WITHIN SEVEN (7) CALENDAR DAYS AFTER STIRRING AND GRADING ACTIVITIES HAVE CEASED IN THE AREA. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE CONTINUED STABILIZATION.
8. PRIOR TO REMOVAL OF SEDIMENT CONTROL MEASURES, THE CONTRACTOR SHALL STABILIZE AND HAVE ESTABLISHED PERMANENT STABILIZATION FOR ALL CONTRIBUTORY DISTURBED AREAS USING SOD OR AN APPROVED PERMANENT SEED MIXTURE WITH REQUIRED SOIL AMENDMENTS AND AN APPROVED ANCHORED MULCH. WOOD FIBER MULCH MAY ONLY BE USED IN SEEDING SEASON WHERE THE SLOPE DOES NOT EXCEED 10% AND GRADING HAS BEEN DONE TO PROMOTE SHEET FLOW DRAINAGE. AREAS BROUGHT TO FINISHED GRADE DURING THE SEEDING SEASON SHALL BE PERMANENTLY STABILIZED AS SOON AS POSSIBLE, BUT NOT LATER THAN SEVEN (7) CALENDAR DAYS AFTER ESTABLISHMENT. WHEN PROPERTY IS BROUGHT TO FINISHED GRADE DURING THE MONTHS OF NOVEMBER THROUGH FEBRUARY, AND PERMANENT STABILIZATION IS FOUND TO BE IMPRACTICAL, TEMPORARY SEED AND ANCHORED STRAW MULCH SHALL BE APPLIED TO DISTURBED AREAS. THE FINAL PERMANENT STABILIZATION OF SUCH PROPERTY SHALL BE APPLIED BY MARCH 15 OR EARLIER IF GROUND AND WEATHER CONDITIONS ALLOW.
9. THE SITE'S APPROVAL LETTER, APPROVED EROSION AND SEDIMENT CONTROL PLANS, DAILY LOG BOOKS, AND TEST REPORTS SHALL BE AVAILABLE AT THE SITE FOR INSPECTION BY DULY AUTHORIZED OFFICIALS OF WMA AND THE AGENCY RESPONSIBLE FOR PROJECT.
10. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO LOWER THE WATER DOWNSLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT THE TOP OF A CUT OR FILL SLOPE UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THEY MUST BE REMOVED AND FINAL GRADING DONE TO PROMOTE SHEET FLOW DRAINAGE. PROTECTIVE METHODS MUST BE PROVIDED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.
11. PERMANENT SWALES OR OTHER POINTS OF CONCENTRATED WATER FLOW SHALL BE STABILIZED WITH SOD OR SEED WITH AN APPROVED EROSION CONTROL MATTING, RIP-RAP, OR BY OTHER APPROVED STABILIZATION MEASURES.
12. TEMPORARY SEDIMENT CONTROL DEVICES MAY BE REMOVED, WITH PERMISSION OF WMA INSPECTOR AND AGENCY INSPECTORS, WITHIN THIRTY (30) CALENDAR DAYS FOLLOWING ESTABLISHMENT OF PERMANENT STABILIZATION IN ALL CONTRIBUTORY DRAINAGE AREAS. STORMWATER MANAGEMENT STRUCTURES USED TEMPORARILY FOR SEDIMENT CONTROL SHALL BE CONVERTED TO THE PERMANENT CONFIGURATION WITHIN THIS TIME PERIOD AS WELL.
13. NO PERMANENT CUT OR FILL SLOPE WITH A GRADIENT STEEPER THAN 3:1 WILL BE PERMITTED IN LAWN MAINTENANCE AREAS. A SLOPE GRADIENT OF UP TO 2:1 WILL BE PERMITTED IN NONMAINTENANCE AREAS PROVIDED THAT THOSE AREAS ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN WITH A LOW-MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENT STEEPER THAN 2:1 WILL NOT BE PERMITTED WITH VEGETATIVE STABILIZATION.
14. FOR FINISHED GRADING, THE CONTRACTOR SHALL PROVIDE ADEQUATE GRADIENTS TO PREVENT WATER FROM PONDING FOR MORE THAN TWENTY FOUR (24) HOURS AFTER THE END OF A RAINFALL EVENT. DRAINAGE COURSES AND SWALE FLOW AREAS MAY TAKE AS LONG AS FORTY-EIGHT (48) HOURS AFTER THE END OF A RAINFALL EVENT TO DRAIN. AREAS DESIGNED TO HAVE STANDING WATER SHALL NOT BE REQUIRED TO MEET THIS REQUIREMENT.
15. SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A FOUNDATION THAT EXISTS OR IS UNDER CONSTRUCTION, NO STRUCTURE MAY BE CONSTRUCTED WITHIN 20 FEET OF AN ACTIVE SEDIMENT TRAP OR BASIN.
16. THE WMA INSPECTOR HAS THE OPTION OF INSURING ADDITIONAL SAFETY OR SEDIMENT CONTROL MEASURES, IF DEEMED NECESSARY.
17. ALL TRAP DEPTH DIMENSIONS ARE RELATIVE TO THE OUTLET ELEVATION. ALL TRAPS MUST HAVE A STABLE OUTFALL. ALL TRAPS AND BASINS SHALL HAVE STABLE INFLOW POINTS.

STANDARD EROSION AND SEDIMENT CONTROL NOTES

18. VEGETATIVE STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. REFER TO APPROPRIATE TABLES FOR PERMANENT SEEDING, PERMANENT SEEDING, MULCHING, SODDING, AND GROUND COVERS.
  19. SEDIMENT SHALL BE REMOVED AND THE TRAP OR BASIN RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO ONE QUARTER OF THE TOTAL DEPTH OF THE TRAP OR BASIN. TOTAL DEPTH SHALL BE MEASURED FROM THE TRAP OR BASIN BOTTOM TO THE CREST OF THE OUTFALL.
  20. SEDIMENT REMOVED FROM TRAPS (AND BASINS) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND OR TREE-SAVE AREA. WHEN PUMPING SEDIMENT LADEN WATER, THE DISCHARGE MUST BE DIRECTED TO A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FROM THE SITE. A SUMP PIT MAY BE USED IF SEDIMENT TRAPS THEMSELVES ARE BEING PUMPED OUT.
  21. ALL WATER REMOVED FROM EXCAVATED AREAS (E.G. UTILITY TRENCHES) SHALL BE PASSED THROUGH AN APPROVED Dewatering PRACTICE OR PUMPED TO A SEDIMENT TRAP OR BASIN PRIOR TO DISCHARGE FROM THE SITE (I.E. VIA FUNCTIONAL STORM DRAIN SYSTEM OR TO STABLE GROUND SURFACE).
  22. SEDIMENT CONTROL FOR UTILITY CONSTRUCTION FOR AREAS OUTSIDE OF DESIGNED CONTROLS OR AS DIRECTED BY ENGINEER OR WMA INSPECTOR:
    - A. CALL "MISS UTILITY" AT 1-800-257-7777 48 HOURS PRIOR TO THE START OF WORK.
    - B. EXCAVATED TRENCH MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF THE TRENCH.
    - C. TRENCHES FOR UTILITY INSTALLATION SHALL BE BACKFILLED, COMPACTED, AND STABILIZED AT THE END OF EACH WORKING DAY. NO MORE TRENCH SHALL BE OPENED THAN CAN BE COMPLETED THE SAME DAY, UNLESS:
    - D. TEMPORARY SILT FENCE SHALL BE PLACED IMMEDIATELY DOWNSTREAM OF ANY DISTURBED AREA INTENDED TO REMAIN DISTURBED FOR MORE THAN ONE DAY.
  23. WHERE DEEMED APPROPRIATE BY THE ENGINEER OR INSPECTOR, SEDIMENT BASINS AND TRAPS MAY NEED TO BE SURROUNDED WITH AN APPROVED SAFETY FENCE. THE FENCE MUST CONFORM TO LOCAL ORDINANCES AND REGULATIONS. THE DEVELOPER OR OWNER SHALL CHECK WITH LOCAL BUILDING OFFICIALS ON APPLICABLE SAFETY REQUIREMENTS, WHERE SAFETY FENCE IS DEEMED APPROPRIATE AND LOCAL ORDINANCES DO NOT SPECIFY FENCING SIZES AND TYPES, THE FOLLOWING SHALL BE USED AS A MINIMUM STANDARD: THE SAFETY FENCE MUST BE MADE OF WELDED WIRE AND AT LEAST 42 INCHES HIGH, HAVE POSTS SPACED NO FARTHER APART THAN 8 FEET, HAVE MESH OPENINGS NO GREATER THAN 2 INCHES IN WIDTH AND 4 INCHES IN HEIGHT WITH A MINIMUM OF 14 GAUGE WIRE. SAFETY FENCE MUST BE MAINTAINED AND IN GOOD CONDITION AT ALL TIMES.
  24. OFF-SITE SLOPE OR BORROW AREAS ON STATE OR FEDERAL PROPERTY MUST HAVE PRIOR APPROVAL BY WMA AND OTHER APPLICABLE STATE, FEDERAL, AND LOCAL AGENCIES. OTHER PRIOR APPROVAL MUST BE GRANTED BY THE LOCAL AUTHORITIES. ALL WASTE AND BORROW AREAS OFF-SITE MUST BE PROTECTED BY SEDIMENT CONTROL MEASURES AND STABILIZED.
  25. SITES WHERE INFILTRATION DEVICES ARE USED FOR THE CONTROL OF STORMWATER, EXTREME CARE MUST BE TAKEN TO PREVENT RUNOFF FROM UNSTABILIZED AREAS FROM ENTERING THE STRUCTURE DURING CONSTRUCTION. SEDIMENT CONTROL DEVICES PLACED IN INFILTRATION AREAS MUST HAVE BOTTOM ELEVATIONS AT LEAST TWO (2) FEET HIGHER THAN THE FINISH GRADE BOTTOM ELEVATION OF THE INFILTRATION PRACTICE. WHEN CONVERTING A SEDIMENT TRAP TO AN INFILTRATION DEVICE, ALL ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF PRIOR TO FINAL GRADING OF INFILTRATION DEVICE.
  26. WHEN A STORM DRAIN SYSTEM OUTFALL IS DIRECTED TO A SEDIMENT TRAP OR SEDIMENT BASIN AND THE SYSTEM IS TO BE USED FOR TEMPORARILY CONVEYING SEDIMENT, ADEQUATE STORM DRAIN INLETS IN THE AREAS SHALL HAVE TEMPORARY ASPHALT BERMS CONSTRUCTED AT THE TIME OF BASE PAVING TO DIRECT GUTTER FLOW INTO THE INLETS TO AVOID SURCHARGING AND OVERFLOW OF INLETS IN SUMP AREAS.
  27. SITE INFORMATION:

|  |                   |
|--|-------------------|
| A. TOTAL AREA OF FACILITY (BASE, CAMPUS, PARK, ETC.) | 376 ACRES         |
| B. TOTAL AREA OF PROJECT SITE                        | 2,22 ACRES        |
| C. AREA DISTURBED BY CONSTRUCTION                    | 0.84 ACRES        |
| D. AREA TO BE ROOFED OR PAVED                        | 3419+ CUBIC YARDS |
| E. TOTAL CUT   | 1178+ CUBIC YARDS |
| F. FILL  | TBD BY CONTRACTOR |
| G. OFF-SITE WASTE / BORROW AREA LOCATION             |                   |
- SOD GENERAL SPECIFICATIONS:**
1. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
  2. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/4 INCH, AND THE CUTTING MEASUREMENTS MUST BE WITHIN 1/8 INCH. SOD EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
  3. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 19 PERCENT OF THE SECTION.
  4. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
  5. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
- SOD INSTALLATION:**
1. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
  2. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGE AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
  3. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. ROLL AND TAMP THE SOD TO ENSURE CONTACT WITH THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
  4. WATER THE SOIL IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
- SOD MAINTENANCE:**
1. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAD OF THE DAY TO PREVENT WILTING.
  2. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONENT.
  3. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS

- A. SITE PREPARATION
  - I. INSTALL EROSION AND SEDIMENT CONTROL STRUCTURES (EITHER TEMPORARY OR PERMANENT) SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, BERMS, WATERWAYS, OR SEDIMENT CONTROL BASINS.
  - II. PERFORM ALL GRADING OPERATIONS AT RIGHT ANGLES TO THE SLOPE. FINAL GRADING AND SHAPING IS NOT USUALLY NECESSARY FOR TEMPORARY SEEDING.
  - III. SCHEDULE REQUIRED SOIL TESTS TO DETERMINE SOIL AMENDMENT COMPOSITION AND APPLICATION RATES FOR SITES HAVING DISTURBED AREA OVER 5 ACRES.
- B. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
  - I. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OVER 5 ACRES. SOIL ANALYSIS MAY BE PERFORMED BY THE UNIVERSITY OF MARYLAND OR A RECOGNIZED COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
  - II. FERTILIZERS SHALL BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROVED EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS SHALL ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE STATE FERTILIZER LAWS AND SHALL BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTEE OF THE PRODUCER.
  - III. LIME MATERIALS SHALL BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED) WHICH CONTAINS AT LEAST 50% TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE SHALL BE GROUND TO SUCH FINENESS THAT AT LEAST 50% WILL PASS THROUGH A # 100 MESH SIEVE AND 98 - 100 % WILL PASS THROUGH A #20 MESH SIEVE.
  - IV. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3" - 5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
- C. SEEDBED PREPARATION
  - I. TEMPORARY SEEDING
    - A. SEEDBED PREPARATION SHALL CONSIST OF LOOSENING SOIL TO A DEPTH OF 3" TO 5" BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT SHOULD NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPED AREAS (GREATER THAN 3:1) SHOULD BE TRACKED LEAVING THE SURFACE IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
    - B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
    - C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3" - 5" OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
  - II. PERMANENT SEEDING
    - A. MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT:
      1. SOIL PH SHALL BE BETWEEN 6.0 AND 7.0
      2. SOLUBLE SALTS SHALL BE LESS THAN 500 PARTS PER MILLION (PPM).
      3. THE SOIL SHALL CONTAIN LESS THAN 40% CLAY BUT ENOUGH FINE GRAINED MATERIAL (> 30% SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS IF LOVEGRASS OR SERGIA LESPEDEZA IS TO BE PLANTED, THEN A SANDY SOIL (< 30% SILT PLUS CLAY) WOULD BE ACCEPTABLE.
      4. SOIL SHALL CONTAIN 1.5 % MINIMUM ORGANIC MATTER BY WEIGHT.
      5. SOIL MUST CONTAIN SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    - B. IF THESE CONDITIONS CANNOT BE MET BY SOILS ON SITE, ADDING TOPSOIL IS REQUIRED IN ACCORDANCE WITH SECTION 21 STANDARD AND SPECIFICATION FOR TOPSOIL.
    - C. AREAS PREVIOUSLY GRADED IN CONFORMANCE WITH THE DRAWINGS SHALL BE MAINTAINED IN A TRUE AND EVEN GRADE, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 - 5" TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREA AND TO CREATE HORIZONTAL EROSION CHECK SLOTS TO PREVENT TOPSOIL FROM SLIDING DOWN A SLOPE.
    - D. APPLY SOIL AMENDMENTS AS PER SOIL TEST OR AS INCLUDED ON THE PLANS.
    - E. MIX SOIL AMENDMENTS INTO THE TOP 3 - 5" OF TOPSOIL BY DISKING OR OTHER SUITABLE MEANS. LAWN AREAS SHOULD BE RAKED TO SMOOTH THE SURFACE, REMOVE, LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION, LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE. STEEP SLOPES (STEEPER THAN 3:1) SHOULD BE TRACKED BY A DOZER LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. THE TOP 1 - 3" OF SOIL SHOULD BE LOOSE AND FRIABLE. SEEDBED LOOSENING MAY NOT BE NECESSARY ON NEWLY DISTURBED AREAS.
  - III. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED SHALL BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED SHALL HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON THIS JOB.
  - NOTE: SEED TAGS SHALL BE MADE AVAILABLE TO THE INSPECTOR TO VERIFY TYPE AND RATES OF SEED USED.
  - IV. INOCULANT - THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES SHALL BE A PURE CULTURE OF NITROGEN-FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS SHALL NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANT AS DIRECTED ON PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75-80° F. CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
- E. METHODS OF SEEDING
  - I. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER), BROADCAST OR DROP SEEDER, OR A CULPACKER SEEDER.
    - A. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES AMOUNTS WILL NOT EXCEED THE FOLLOWING: NITROGEN: MAXIMUM OF 100 LBS. PER ACRE TOTAL OF SOLUBLE NITROGEN: P205 (PHOSPHORUS): 200 LBS/AC; K20 (POTASSIUM): 200 LBS/AC.
    - B. LIME - USE ONLY GROUND AGRICULTURAL LIMESTONE, (UP TO 3 TONS -PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
    - C. SEED AND FERTILIZER SHALL BE MIXED ON SITE AND SEEDING SHALL BE DONE IMMEDIATELY AND WITHOUT INTERRUPTION.

- II. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
  - A. SEED SPREAD DRY SHALL BE INCORPORATED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON THE TEMPORARY OR PERMANENT SEEDING SUMMARIES OR TABLES 25 OR 26. THE SEEDED AREA SHALL THEN BE ROLLED WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
  - B. WHERE PRACTICAL, SEED SHOULD BE APPLIED IN TWO DIRECTIONS PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
  - III. DRILL OR CULPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
    - A. CULPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
    - B. WHERE PRACTICAL, SEED SHOULD BE APPLIED IN TWO DIRECTIONS PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
  - F. MULCH SPECIFICATIONS (IN ORDER OF PREFERENCE)
    - I. STRAW SHALL CONSIST OF THOROUGHLY THRESHED WHEAT, RYE OR OAT STRAW, REASONABLY BRIGHT IN COLOR, AND SHALL NOT BE MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY AND SHALL BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW.
    - II. WOOD CELLULOSE FIBER MULCH (WCFM)
      - A. WCFM SHALL CONSIST OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
      - B. WCFM SHALL BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
      - C. WCFM, INCLUDING DYE, SHALL CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
      - D. WCFM MATERIALS SHALL BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL SHALL FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND SHALL COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
      - E. WCFM MATERIAL SHALL CONTAIN NO ELEMENTS OR COMPOUNDS AT CONCENTRATIONS LEVELS THAT WOULD BE HARMFUL TO PLANTS.
      - F. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH TO APPROXIMATELY 10 MM., DIAMETER APPROXIMATELY 1 MM., PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6% MAXIMUM AND WATER HOLDING CAPACITY OF 90% MINIMUM.
      - NOTE: ONLY STERILE STRAW MULCH SHOULD BE USED IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
    - G. MULCHING SEEDED AREAS - MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
      - I. IF GRADING IS COMPLETED OUTSIDE OF THE SEEDING SEASON, MULCH ALONE SHALL BE APPLIED AS PRESCRIBED IN THIS SECTION AND MAINTAINED UNTIL THE SEEDING SEASON RETURNS AND SEEDING CAN BE PERFORMED IN ACCORDANCE WITH THESE SPECIFICATIONS.
      - II. WHEN STRAW MULCH IS USED, IT SHALL BE SPREAD OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS/ACRE. MULCH SHALL BE APPLIED TO A UNIFORM LOOSE DEPTH OF BETWEEN 1" AND 2". MULCH APPLIED SHALL ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHOULD BE INCREASED TO 2.5 TONS/ACRE.
      - III. WOOD CELLULOSE FIBER USED AS A MULCH SHALL BE APPLIED AT A NET DRY WEIGHT OF 1,500 LBS. PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH 10% WATER. THE MULCH SHALL CONTAIN A MAXIMUM OF 50 LBS. OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
      - H. SECURING STRAW MULCH (MULCH ANCHORING): MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE AREA AND EROSION HAZARD.
        - A. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF TWO (2) INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD BE USED ON THE CONTOUR IF POSSIBLE.
        - II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. THE FIBER BINDER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 POUNDS/ACRE. THE WOOD CELLULOSE FIBER BINDER SHALL BE MIXED WITH WATER AND MULCH SHALL CONTAIN A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
        - III. APPLICATION OF LIQUID BINDERS SHOULD BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. THE REMINDER OF AREA SHOULD BE APPEAR UNIFORM AFTER BINDER APPLICATION.
        - IV. SYNTHETIC BINDERS - SUCH AS ACRYLIC CLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH.
        - V. LIGHTNING PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4' TO 15' FEET WIDE AND 300 TO 3,000 FEET LONG.
      - I. INCREMENTAL STABILIZATION - CUT SLOPES
        - A. ALL CUT SLOPES SHALL BE DRESSED, PREPARED, SEEDED AND MULCHED AS THE WORK PROGRESSES. SLOPES SHALL BE EXCAVATED AND STABILIZED IN EQUAL INCREMENTS NOT TO EXCEED 15'.
        - II. CONSTRUCTION SEQUENCE (REFER TO FIGURE 3 BELOW):
          - A. EXCAVATE AND STABILIZE ALL TEMPORARY SWALES, SIDE DITCHES, OR BERMS THAT WILL BE USED TO CONVEY RUNOFF FROM THE EXCAVATION.
          - B. LIME - USE ONLY GROUND AGRICULTURAL LIMESTONE.
          - C. PERFORM PHASE 2 EXCAVATION, DRESS, AND STABILIZE.
          - D. PERFORM FINAL PHASE EXCAVATION, DRESS, AND STABILIZE. OVERSEED PREVIOUSLY SEEDD AREAS AS NECESSARY.
        - NOTE: ONCE EXCAVATION HAS BEGUN, THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.
      - J. INCREMENTAL STABILIZATION OF EMBANKMENTS - FILL SLOPES
        - I. EMBANKMENTS SHALL BE CONSTRUCTED IN LIFTS AS PRESCRIBED ON THE PLANS.
        - II. SLOPES SHALL BE STABILIZED IMMEDIATELY WHEN THE VERTICAL HEIGHT OF THE MULTIPLE LIFTS REACHES 15', OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
        - III. AT THE END OF EACH DAY, TEMPORARY BERMS AND PIPE SLOPE DRAINS SHOULD BE CONSTRUCTED ALONG THE TOP EDGE OF THE EMBANKMENT TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER TO A SEDIMENT CONTROL DEVICE.
        - IV. CONSTRUCTION SEQUENCE: REFER TO FIGURE 4 (BELOW).
          - A. EXCAVATE AND STABILIZE ALL TEMPORARY SWALES, SIDE DITCHES, OR BERMS THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL CONSTRUCT SLOPE SILT FENCE ON LOW SIDE OF FILL AS SHOWN IN FIGURE 5, UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
          - B. PLACE PHASE 1 EMBANKMENT, DRESS AND STABILIZE.
          - C. PLACE PHASE 2 EMBANKMENT, DRESS AND STABILIZE.
          - D. PLACE FINAL PHASE EMBANKMENT, DRESS AND STABILIZE. OVERSEED PREVIOUSLY SEEDD AREAS AS NECESSARY.
        - NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN, THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

TEMPORARY SEEDING TABLE B.1

| SEED MIXTURE (HARDINESS ZONE 6b )<br>(FROM TABLE B.1) |         |                             |                  |                  | FERTILIZER<br>RATE<br>(10-10-10) | LIME RATE                    |
|---|---------|-----------------------------|------------------|------------------|----------------------------------|------------------------------|
| NO.   | SPECIES | APPLICATION<br>RATE (lb/ac) | SEEDING<br>DATES | SEEDING<br>DEPTH |                                  |                              |
| BARLEY  | 96      | 3/1-5/15<br>8/1-10/15       | 1"               |                  | 436 lb/ac<br>(10 lb/1000 sf)     | 2 tons/ac<br>(90 lb/1000 sf) |
|   |         |                             |                  |                  |                                  |                              |
| CEREAL RYE  | 112     | 3/1-5/15<br>8/1-11/15       | 1"               |                  |                                  |                              |
| WHEAT   | 120     | 3/1-5/15<br>8/1-10/15       | 1"               |                  |                                  |                              |
| FOXTAIL MILLET  | 30      | 5/16-7/31                   | 1/2"             |                  |                                  |                              |

APPLIES TO EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

PERMANENT SEEDING TABLE B.3

| SEED MIXTURE (HARDINESS ZONE 6b )<br>(FROM TABLE B.3) |                              |                             |                       |                                  | FERTILIZER RATE<br>(10-20-20)  |                                |                                  | LIME<br>RATE |
|---|------------------------------|-----------------------------|-----------------------|----------------------------------|--------------------------------|--------------------------------|----------------------------------|--------------|
| MIX<br>NO.  | SPECIES                      | APPLICATION<br>RATE (lb/ac) | SEEDING<br>DATES      | N                                | P-20                           | K-20                           |                                  |              |
| 9   | TALL FESCUE(200)             | 60                          |                       | 45 lb/ac<br>(1.0 lb/<br>1000 sf) | 90 lb/ac<br>(2 lb/<br>1000 sf) | 90 lb/ac<br>(2 lb/<br>1000 sf) | 2 tons/ac<br>(90 lb/<br>1000 sf) |              |
|   | PENNSYLVANIAN BLUEGRASS(150) | 20                          | 3/1-5/15<br>8/1-10/15 |                                  |                                |                                |                                  |              |
|   | KENTUCKY BLUEGRASS(300)      | 40                          |                       |                                  |                                |                                |                                  |              |

APPLIES TO EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

SEEDING OR SODDING FOR PLAYING FIELDS SHALL BE PER SPECIFICATIONS ALL OTHER AREAS SHALL RECEIVE THE ABOVE PERMANENT SEED MIX

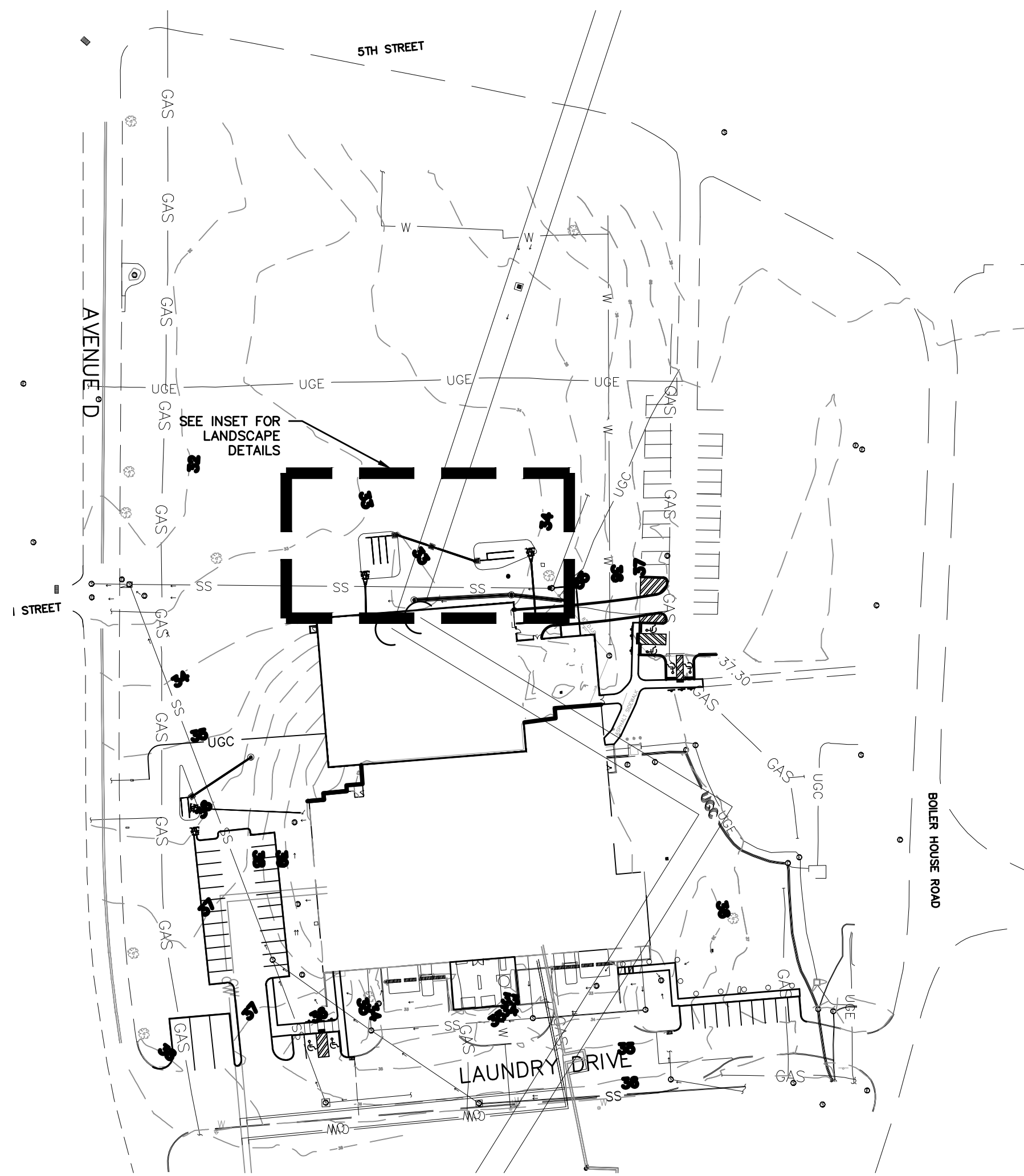
PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE  
PREPARED OR APPROVED BY ME, AND THAT I AM A DULY  
LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF  
THE STATE OF MARYLAND.  
LICENSE NUMBER: 31168  
EXPIRATION DATE: 1/12/2017

FULLY SPRINKLERED

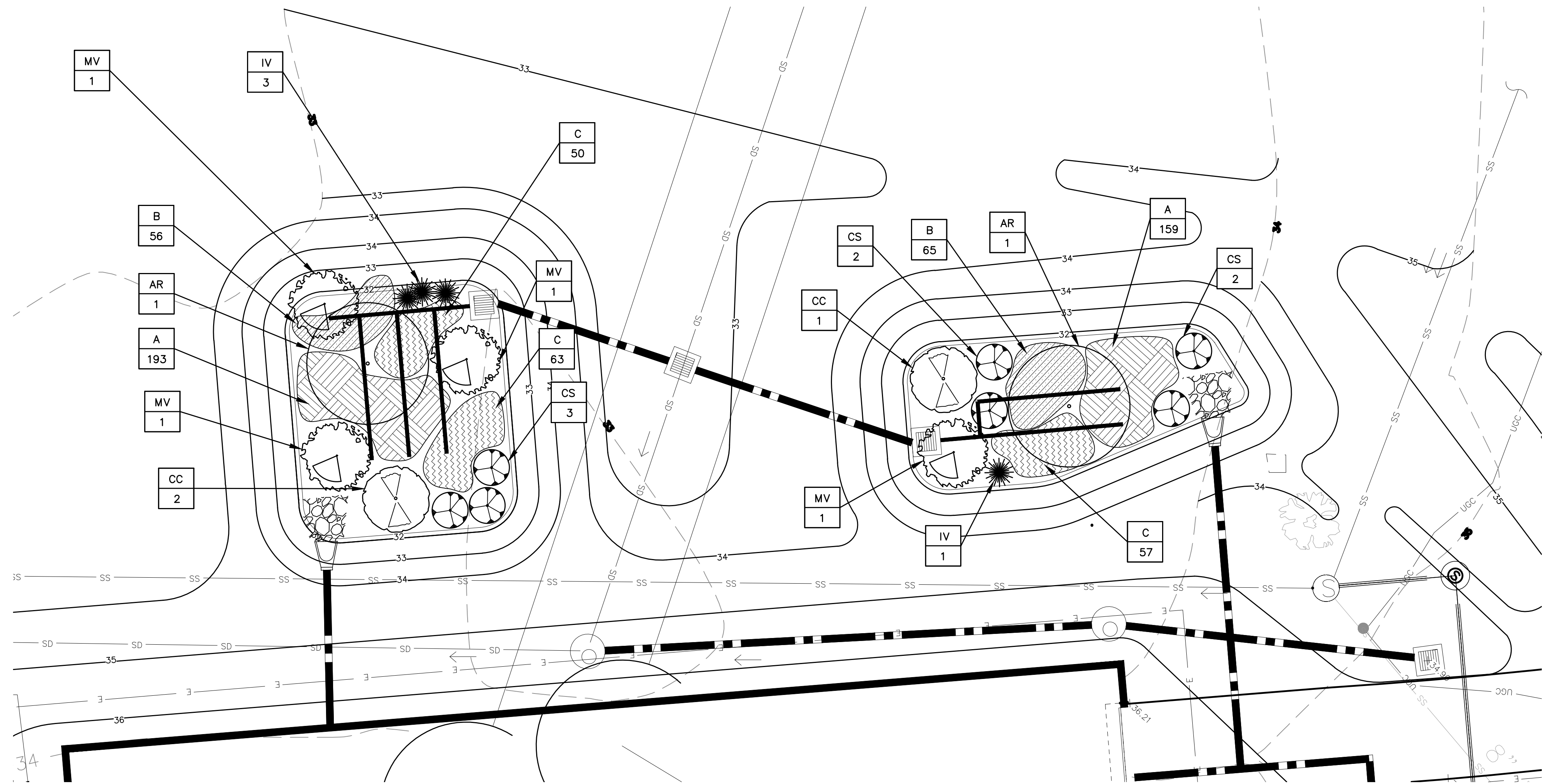
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|--|----------------------|---------------------|--|-------------------------------------|
| Project Title<br><b>WAREHOUSE RENOVATION<br/>&amp; EXPANSION</b> |                      |                     |  | Date<br><b>11/23/15</b>             |
| Scale  |                      |                     |  | VA Project Number<br><b>512-530</b> |
| Building Number<br><b>360</b>                                    | Checked<br><b>JA</b> | Drawn<br><b>DWC</b> | Drawing Number<br><b>CU-415</b><br>OF XX |                                     |
| Location<br><b>PERRY POINT, MD</b>                               |                      |                     |  |                                     |



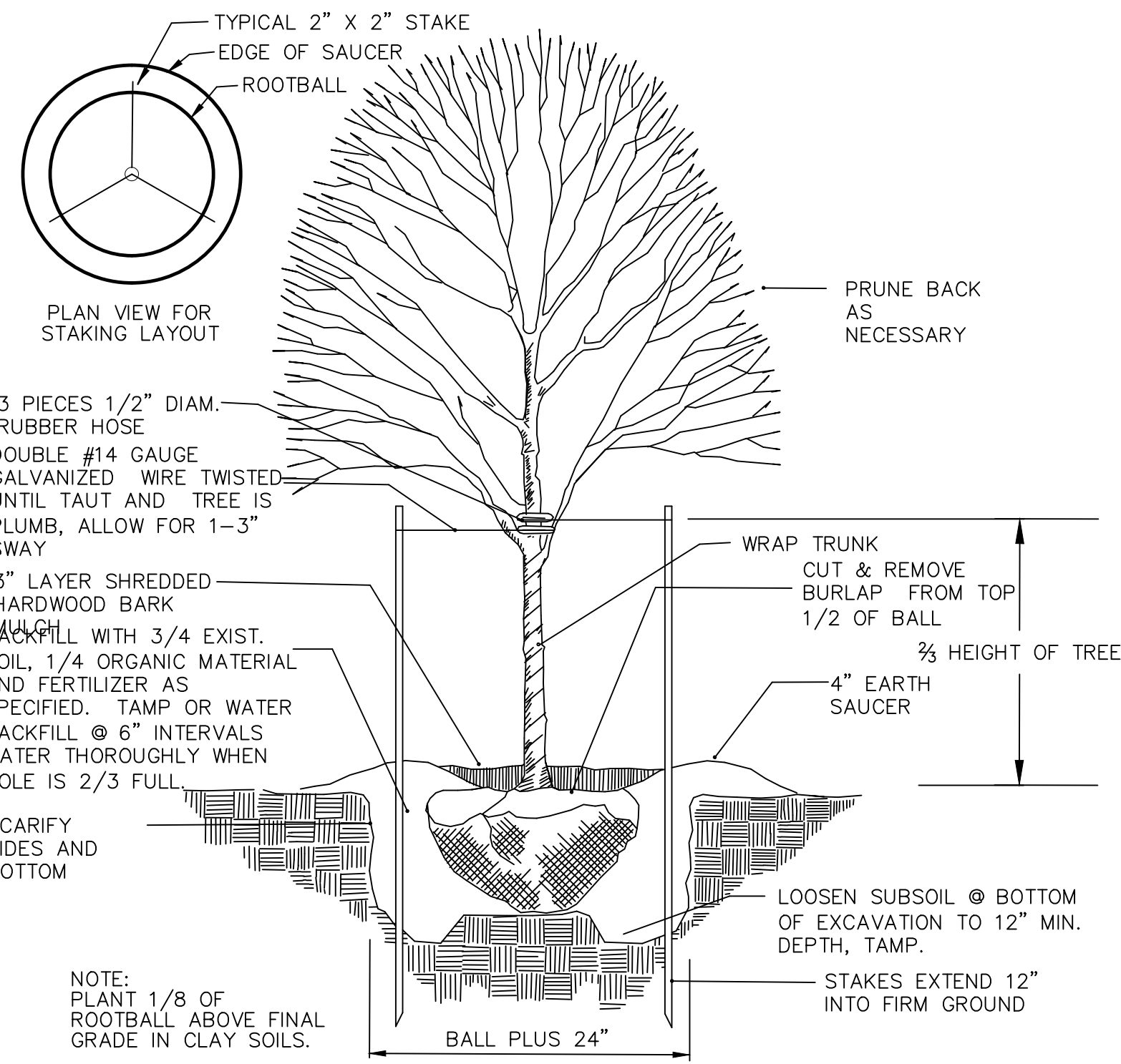




LANDSCAPE OVERVIEW PLAN  
SCALE: 1" = 50'



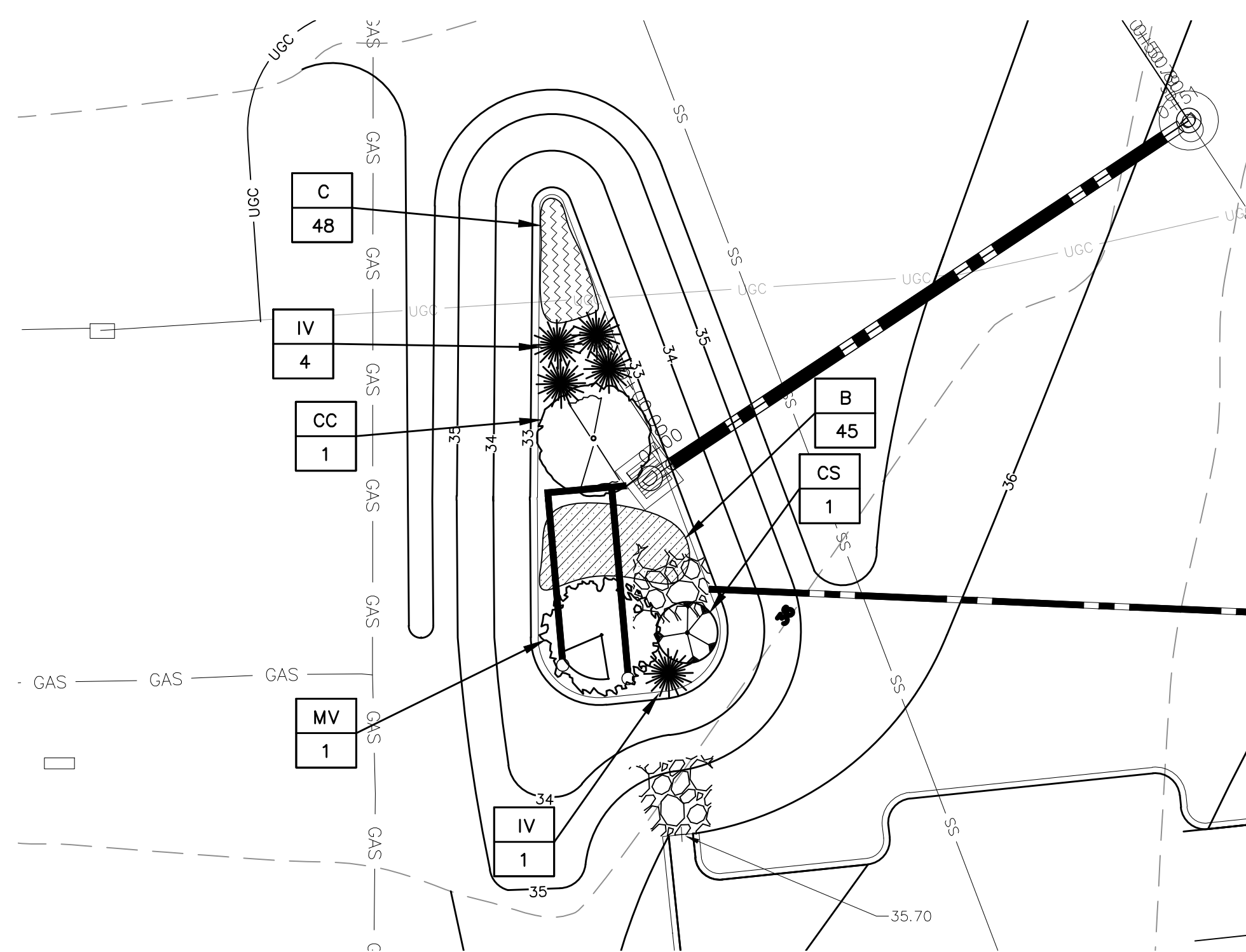
LANDSCAPE DETAILED PLAN FOR AREAS A AND B  
SCALE: 1" = 10'



5 TREE PLANTING DETAIL  
NOT TO SCALE

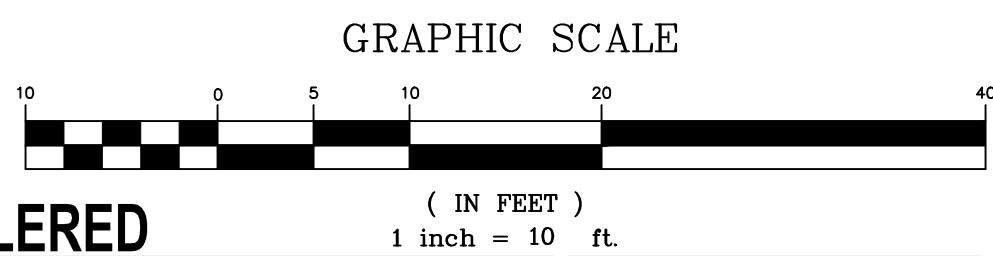
| Plant Schedule |        |   |      |                 |          |
|----------------|--------|---|------|-----------------|----------|
| Key            | Symbol | Scientific/Common Name                                  | Qty. | Size            | Remarks  |
| AR             |        | Acer Rubrum 'October Glory'<br>October Glory Red Maple  | 2    | 2" - 2 1/2" cal | WB       |
| C              |        | **Aster Novae Angliae**<br>New England Aster            | 109  | 1 qt            | 18" O.C. |
| C              |        | **Solidago Rugosa 'Fireworks'**<br>Fireworks Goldenrod  | 109  | 1 qt            | 18" O.C. |
| CC             |        | Cercis Canadensis<br>Redbud                             | 3    | 2" - 2 1/2" cal | WB       |
| CS             |        | Cornus Serica<br>Red Twig Dogwood                       | 8    | 2 1/2' - 3' ht  | 3 gal    |
| A              |        | Elymus Virginicus<br>Virginia Wild Rye                  | 352  | 4" plug         | 12" O.C. |
| IV             |        | Itea Virginia<br>Virginia Sweetspire                    | 9    | 18" - 24" ht    | 3 gal    |
| MV             |        | Magnolia Virginia<br>Sweetbay Magnolia                  | 5    | 8' - 10' ht     | WB       |
| B              |        | Panicum Virgatum 'Shenandoah'<br>Shenandoah Switchgrass | 166  | 1 qt            | 18" O.C. |

\*\* TO BE PLANTED TOGETHER \*\*



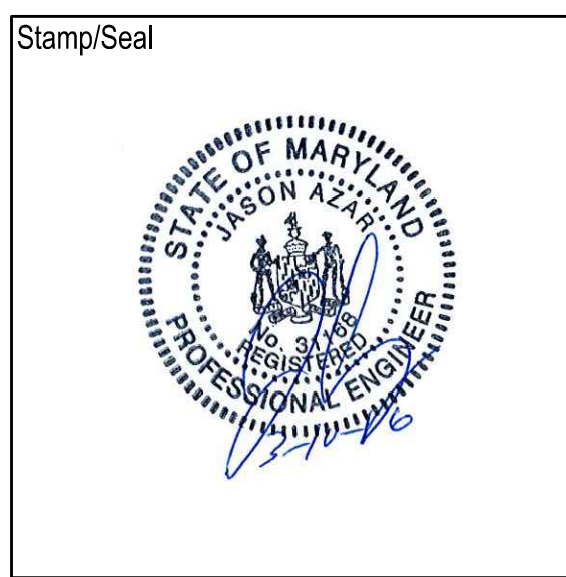
LANDSCAPE DETAILED PLAN FOR AREA C  
SCALE: 1" = 10'

PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE  
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EXPIRATION DATE: 11/12/2017



| Additions:                              | Date     |
|---|----------|
|   |          |
|   |          |
|   |          |
|   |          |
| Revisions:                              | Date     |
| SCHEMATIC DESIGN (30% SUBMISSION)       |          |
| DESIGN DEVELOPMENT (60% SUBMISSION)     | 09/11/15 |
| CONSTRUCTION DOCUMENTS (90% SUBMISSION) | 11/23/15 |
| BID DOCUMENTS (100% SUBMISSION)         | 03/17/16 |
|   |          |
|   |          |

| ARCHITECT / ENGINEERS / CONSULTANTS:  |   |  |  |
|---|---|--|--|
| OKKS Studios, Inc.<br>2 Wisconsin Circle / Suite 820<br>Chevy Chase, MD 20815-7003<br>Tel: (301) 718-0080<br>Fax: (301) 718-9520<br>www.okksstudios.com | Woods Peacock Engineering Consultants<br>5250 Cherokee Avenue, Suite 420<br>Alexandria, VA 22312-2052<br>Tel: (703) 658-4400<br>Fax: (703) 658-4404 | Nobis Engineering, Inc.<br>20410 Century Boulevard, Suite 230<br>Germantown, MD 20874<br>Tel: (301) 528-2010 | The Protection Engineering Group<br>2809 Boston Street, Suite 7<br>Baltimore, MD 21224 USA<br>Tel: (410) 296-6300<br>Fax: (410) 296-6301 |
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|           |   |
|-----------|---|
| Approved: | Approved: Chief, Facilities and Engineering                           |
|           |   |
|           | Approved: Associate Chief for Maintenance And Operations, Perry Point |
|           |   |
|           | Approved: Engineering Projects Supervisor                             |
|           |   |
|           | Approved: Infection Control Officer                                   |
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| Approved: Chief, Facilities and Engineering                           |
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| Approved: Associate Chief for Maintenance And Operations, Perry Point |
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| Approved: Engineering Projects Supervisor                             |
|   |
| Approved: Infection Control Officer                                   |
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|---|
| Drawing Title                               |
| LANDSCAPING PLANS                           |
| Approved: Associate Director for Operations |
|   |
| Approved: Director, Medical Center          |
|   |

| FULLY SPRINKLERED |                                  |                |           |
|-------------------|----------------------------------|----------------|-----------|
| Project Title     | Warehouse Renovation & Expansion | Date           | 11/23/15  |
| Scale             | Building Number 360              | Checked JA     | Drawn DWC |
| Location          | PERRY POINT, MD                  | Drawing Number | L-100     |

|                   |         |
|-------------------|---------|
| VA Project Number | 512-530 |
| Drawing Number    | L-100   |
| OF XX             |         |

